ATHLETIC JOURNAL

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Essentials to Be Learned in the Art of High Hurdling

T. E. Jones

Learning to Be an Infielder

J. E. Gargan

Basketball of 1944

Nelson Nitchman, Lieutenant U.S.C.G.R.

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VOLUME XXIV

The ATHLETIC JOURNAL

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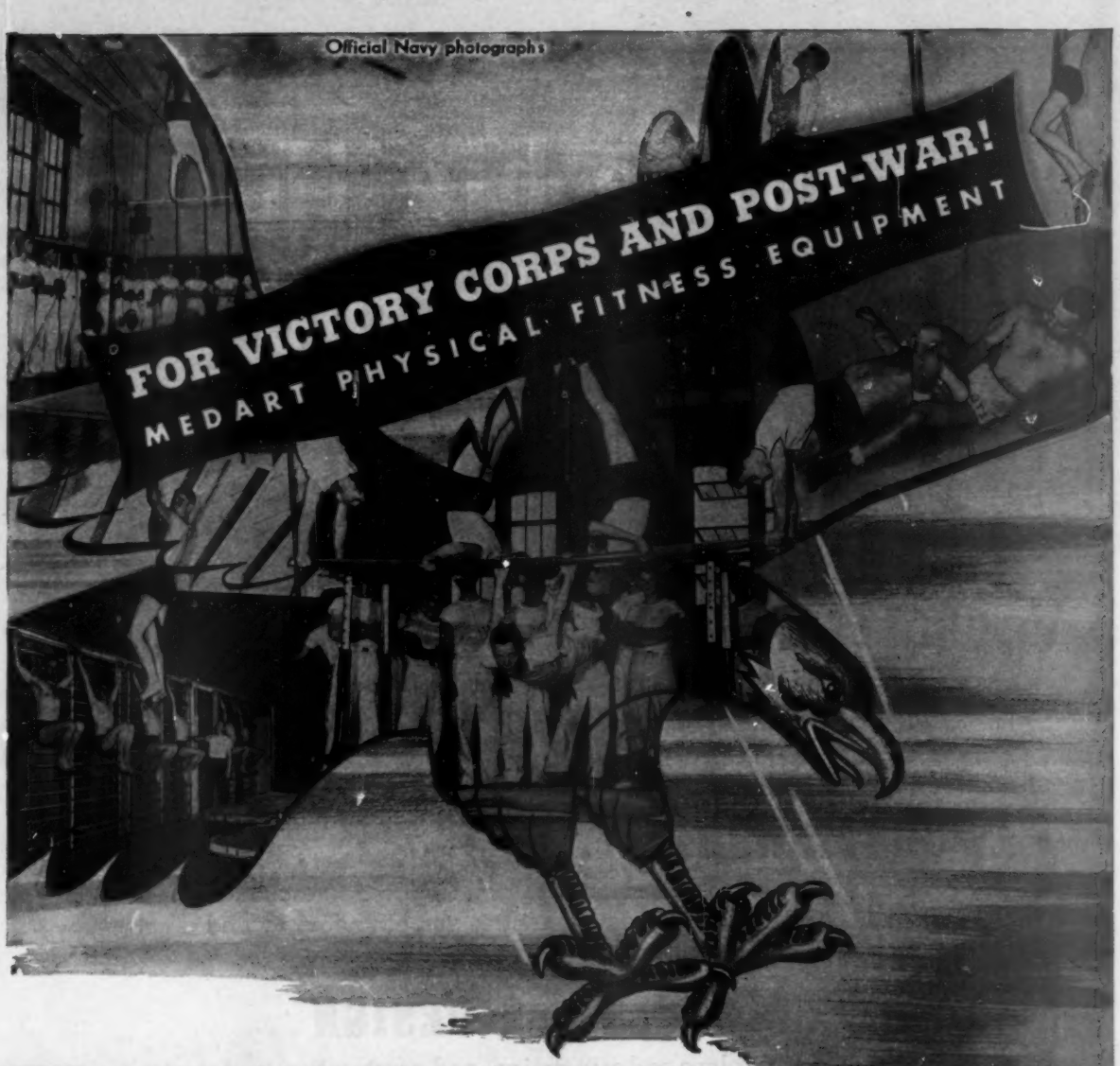

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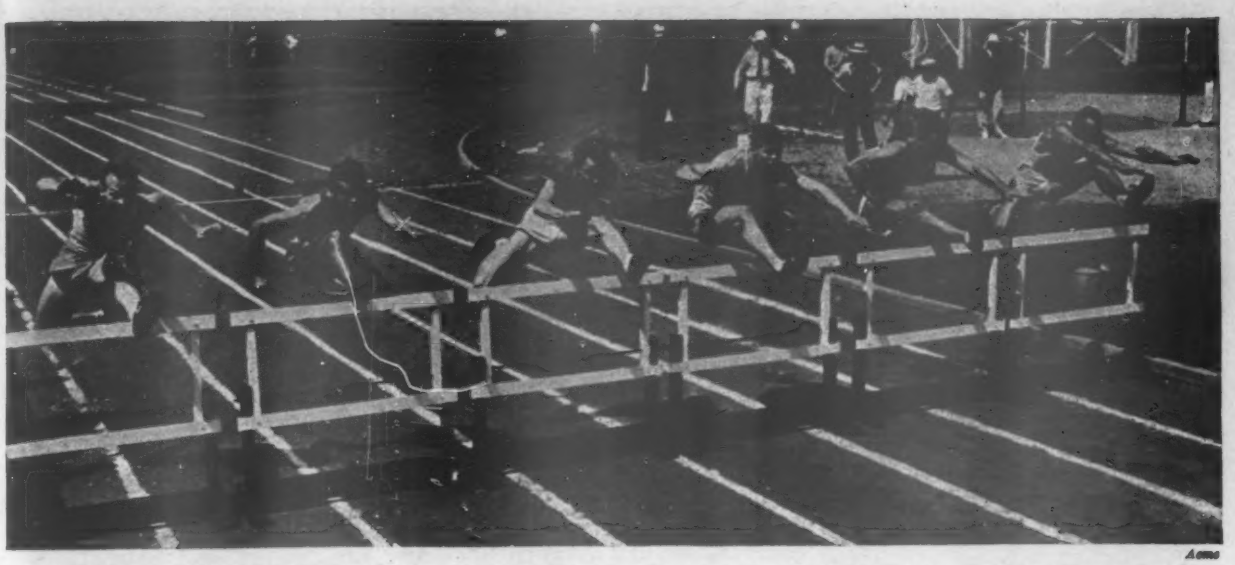


The 1943 National Collegiate Athletic Association 120-high hurdle event. Left to right: Douglas Jaques, Texas (third); Bill Cummins, Rice (winner); Lee Angelich, California; Jim Fieweger, Lawrence (second); Louis Futrell, Fresno; and Tom Todd, Virginia.

Essentials to Be Learned in the Art of High Hurdling

By T. E. Jones
Track Coach, University of Wisconsin

SINCE many track coaches are now in the services, and academic teachers are being called upon to fill in, a review of the essential elements in the technique of high hurdling should be helpful.

It is interesting to note how the records have been constantly lowered with the progress in hurdling form. No event shows more progress in the space of sixty-seven years.

In referring to form, we generally think of the *spread over the hurdle* in the act of clearance. This involves many techniques to be studied and practiced.

The accepted form of the nineties was the *bent-front knee-action* in approaching the hurdle, with upright body and spread-eagle arm-action, and the lower leg parallel to the hurdle with the foot and knee clearing the hurdle at the same time.

In 1891 H. L. Williams, the "father" of Minnesota football, was the first to break sixteen seconds using this form. His time was :15 4/5. In 1892 W. H. Henry, and in 1894 S. Chase, with a slight improvement in leading leg action, lowered the record to :15 3/5.

The introduction of the *straight-leg step-over* by Alvin Kraenzlein in 1898 was the most important development in the evolution of hurdling form, and with it, he lowered the record to :15 1/5. This form was accepted as a model universally, because it was so successfully displayed; and because of this, Kraenzlein is rightfully called the "Father of Modern Hurdling Form." Using this form, the hurdler is able to maintain his forward sprinting position. With this new form came general improvement, and since then, the most significant changes have been in the technique of the arm action and the body buck.

Smithson, Garrells and Shaw added the *semilunge*, but still retained the side-arm action (1907). Marked improvement was noted when the arm action was synchronized with the legs to produce *forward* movement in place of being merely used for balance. J. P. Nicholson in 1911 introduced the full-body lunge with the half-bent forward and backward arm action; and Fred Kelly and F. R. Gaby improved on this by using the full straight-arm action. Kelly (1912) was the first man to run the event under fifteen seconds.

Robert Simpson should be credited with the use of the straight-arm action and the accentuated body buck which enabled him to establish a new record of :14.6. Earl Thomson improved on Simpson's form by the use of the double arm thrust with which he lowered the record to :14.2.

Perfection of hurdling form means just sprinting over the hurdles with ten elongated strides (11 feet), executed with balance and precision in clearing.

George Saling, one of the most thorough students of hurdling, without unusual physical qualifications, but with careful study and training, developed into the 1932-Olympic champion and the world-record holder. His time was :14.1. Forrest Towns, the last record breaker (:13.7) had a combination of hurdling requisites —height, speed, strength and form, to make him the champion he proved to be. His contribution to form was the use of the high, circular knee action of the rear leg in clearance. Fred Wolcott, who has tied Towns' record, adopted the principles

The Evolution of hurdling form as recorded by photos.
Old bent leg form.
Kraenzlein straight leg.
Garrell's semibreak with spread eagle arm action.
Body dip with semibent arm—Nicholson.
Full straight arm action—F. Kelly and F. R. Gaby.
Full body dip with double arm action. Simpson and Thomson.
The snap-down of leading leg—Simpson and Thomson.
The quick snapdown of landing leg—Thomson.
The high circular knee action of Forrest Towns.

THIS excellent article by T. E. Jones, track coach at the University of Wisconsin, with the graph on page 9, gives a most concrete picture of the development in high hurdling. The article, moreover, suggests the value of illustrations to coaches in presenting to their hurdle aspirants the correct studies in form.

in technique best suited to his physique, and has shown what a :9.5-sprinter can do when he takes up hurdling.

Physical and Mental Qualifications

High hurdling requires a more definite type of athlete than any other track event. A high degree of natural and acquired ability is needed. Certain physical requirements must be complied with if a man is to become a first-class hurdler. *Height* is a prerequisite. Tall men excel in this event. Length of limb is an important factor in clearing a 3-foot, 6-inch barrier while sprinting.

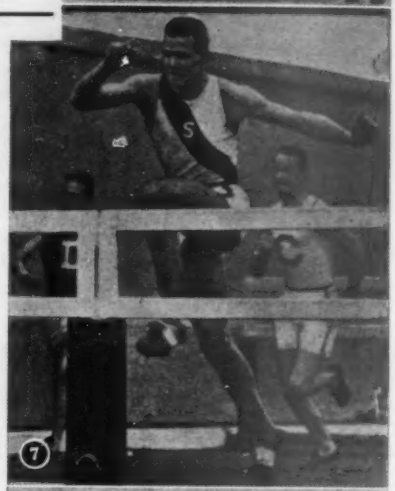
Our champions have all been tall, powerful, well-built athletes, six feet or better, with jumping and sprinting ability. The good hurdler must also possess *speed*—near the 10-second mark—suppleness of hip action, co-ordination to an unusual degree, and a good sense of rhythm, balance, vision, and judgment of distance.

The *mental attributes* that a hurdler should possess are that he should be a student of hurdling and its elements. He must be willing to work hard and long to perfect his form. He must be able to concentrate, must be patient, and not become easily discouraged, for there are many spills, barked ankles and knees that must be endured in training. Above all, he must possess competitive courage.

The Elements of High Hurdling

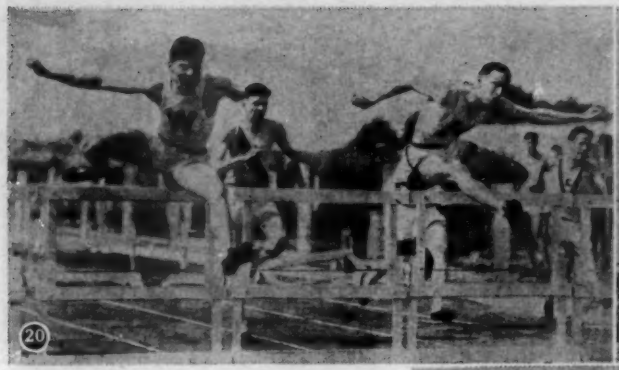
The elements of high hurdling might be grouped under four heads, the start and approach, form over the hurdle, strides between the hurdles, and the finish.

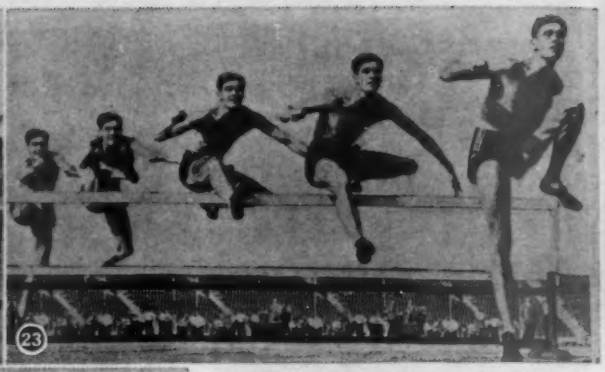
The Start and Approach. The start of the hurdler is the same as that of the sprinter with the important exception that the hurdler must rise to his full upright running position sooner and more abruptly because he has to clear the barrier. The hurdler should give the same attention to foot placing, weight distribution, body



1—The old bent-leg form.
2—Alvin Kraenzlein showing straight-leg hurdling.
3—John Garrells, using a semi-body dip with spread-eagle-arm action.
4—John P. Nicholson showing forward arm semiflexed.
5—Shows the straight arm work of F. R. Gaby.
6—Fred Kelly, showing straight arm action.
7—F. Murry, showing powerful arm and leg drive.
8—Robert Simpson—Full body dip.
9—Robert Simpson showing one arm extension and accentuated body dip.
10—Robert Simpson showing fine drive from the landing leg.
11—Robert Simpson—Note the fine balance.
12—Earl Thomson showing fine body dip and balance.
13—L. Dye—Perfect balance.
14—Earl Thomson—Note the quick cut down with the leading leg.
15—Earl Thomson—Start of the two-arm thrust and body dip.
16—Earl Thomson—Start of forward leg lift and rear leg drive.
17—Earl Thomson—Full extension in the double-arm thrust.
18—Earl Thomson—Clearance position.
19—Earl Thomson—A perfect landing and driving position.

tension and reaction time as the sprinter. The greatest speed compatible with steadiness should be the aim of the hurdler during his approach to the first hurdle and only long practice over three hurdles will perfect this. Much attention must be given to the first stride. After he leaves the starting line, his stride must be regulated to bring the take-off foot at the proper distance from the hurdle (about 7′ 4″). This varies with the speed and height of the individual. The number of strides to the first hurdle may be seven or eight, depending upon the individual. The average hurdler will usually use eight strides, clearing the hurdle on the ninth. Most of the champions, however, have approached with seven, clearing on the eighth. Included in this group of men are Garrells, Nicholson, Simpson, Thomson, Baird, Towns and the present champions,





20—Al Knollin and K. Anderson showing close clearance.
21—R. D. Osgood—Note the straight leg and good balance.

22—Forrest Towns showing perfect balance.
23—Forrest Towns showing the high circular forward knee action.

Ed Duggar and Robert Wright. Those taking eight strides to the first hurdle and clearing on the ninth include Kelly, Tolmich and Wolcott. The advantage claimed for the eight-stride approach is that more initial speed is attained while the advantage claimed for the seven-stride approach is that hurdle cadence is started from the mark and no adjustment is necessary for the second hurdle.

The average distance of the take-off in clearing a 42″-hurdle is about 7′ 4″, while the average distance of the take-off in clearing a 39″-hurdle is 7′. The average cut-down over the hurdle is 4′ 2″. Just as in sprinting, the length of the stride from the starting line gradually increases. Shortening or lengthening the first stride off the mark will usually be sufficient for the average adjustment needed, because a hurdler tends to carry the effect of this shortening or lengthening of the first stride over into his succeeding steps. If a hurdler leads with the right leg, and can get to the take-off spot in eight strides, he can assume a position on the mark with the left foot forward, but if he leads with the left foot, he will need to reverse his feet on the mark or approach in seven strides.

Form Over the Hurdle or Clearance. The four outstanding factors in the clearance are the *take-off*, the *body-forward dip* called buck or lunge, the *spread over the hurdle*, and the *quick landing or snap-down*. The details of modern form are briefly as follows: The forward leg and arm opposite are placed straight forward over the hurdle while simultaneously the body is dipped forward from the waist. The rear leg is drawn up and out to the side, so that in the position of clearing the hurdle, it forms three right angles—namely, that of the body with the upper leg which extends straight sideways, that of the upper leg with the lower which is bent directly backwards, and that of the lower leg with the foot which is pointed out parallel to the upper leg. The body, however, is not in an upright position while over the hurdle, rather it is dipped sharply forward. While in this position, the leading leg is snapped down to the ground as quickly as possible.

At the take-off, the shoulders should be kept squarely to the front. This is made easier by the forward arm thrust and it aids in maintaining running alignment.

George Saling, University of Iowa, winning the 110-meter high hurdles in the 1932 Olympic Games—Record 14.4. Illustration 1 shows the start of the take-off. Note the position of the hands. In Illustrations 2 and 3 the body thrust toward the hurdle is shown. Illustrations 4, 5, 6 and 7—The clearance, note the straight leg and body buck. Illustration 8 shows landing and drive on the first stride after clearing. (Reprinted by courtesy of David L. Holmes from his "Movies on Paper.")

24—**Fred Wolcott (Co-holder of world record with Forrest Towns).**

25—**Edward Dugger, record 13:9.**

26—**Charles Hlad showing good double arm thrust, straight leg and body dip.**

The shoulders should be rolled forward, the stomach drawn in and the back kept relaxed. The body should be dipped forward until it almost touches the forward knee. This angle will vary with suppleness and height. However, a premature body lunge should be avoided because it will limit the forward knee lift.

The rear leg forward action does not start until the lead leg starts downward.

There are two variations in the use of the arms by modern hurdlers. The first recommended is the *double-arm thrust*, where both arms are extended at the start of the body dip, the one opposite the leading leg being less extended. The other is the single-arm thrust with the other arm backward. The arm action and stride should be synchronized.

Too long a take-off slows up a hurdler as does a delayed snap-down of the leading leg in landing. The leading leg should be partially relaxed as it contacts the ground to permit the momentum to be carried forward into the next stride. The body angle should be reduced to the sprinting angle at the time of landing, thus permitting a longer stride with the rear leg and a powerful drive of the landing leg. A downward drive of the leading leg will assist in the rear leg lift, a whip-down of the leading hand, also, helps hasten the landing or contact with the ground. Perfection of form comes with the elimination of unnecessary movements. The essence of good hurdling is quick, close clearance.

With practice, the stepping-over becomes practically continuous with the striding. The well-timed single or double arm thrusts, body lunge, snap-down, and rear high circular knee action that have been employed by champions should be carefully studied in pictures, stills and movies, by all hurdling aspirants. The fine pictures that have been published of Simpson and Thomson have contributed greatly to improved hurdling form.

Stride Between the Hurdles. The accompanying diagram shows the measurements and correct methods of placing the hurdles in the 120-yard hurdle races. Seven strides to the first hurdle; over on the eighth, or eight strides to the first hurdle and over on the ninth. Three strides between, over on the fourth.

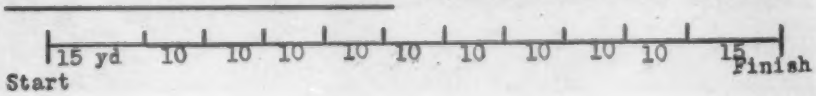
Three full strides are regularly taken between the hurdles, the fourth being the leap over the next hurdle. Each succeeding stride must be longer than its predecessor, namely 5—6—7 in order to cover the eighteen or nineteen feet remaining of the thirty-foot distance following the 7 + / 4 + feet used in clearance.

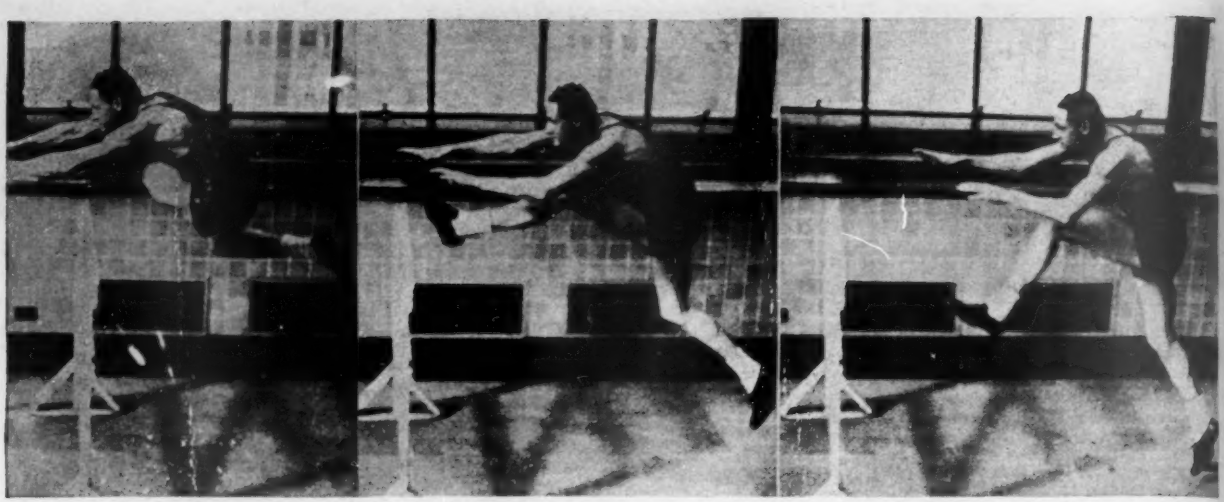
If one is having difficulty getting too close to the hurdle, or finds it difficult to reach the next hurdle, the best place to make the adjustment is in the recovery step. The aim is to maintain the original momentum without losing either balance or control.

Vigorous arm action will help maintain the length of stride and momentum. Hurdlers should carry their arms lower than a sprinter. The elbow, however, should lead on the backward swing. The eyes must be set on the top of the next hurdle. This is one race, wherein all the faculties must be concentrated solely on one's own effort without regard to the relative position of the other contestants. A glance to the side is too risky in this highly organized fast-moving event.

The Finish. It is well to plan to clear the last two hurdles a little higher to counteract the effects of fatigue. After clearing the last hurdle, the runner should change his stride from that of a hurdler to that of a sprinter. The drive down the final 15 yards often determines the winner and should bring forth an intensive effort on the part of the runner. The head and the body from the waist should be inclined slightly forward, the arm action jerky and vigorous, the eyes, head, and shoulders pointed straight to the front until the finish line is passed. The technique of finishing should be practiced by every hurdler.

1876 19 Sec. Geo. Hitchcock
1877 18½ Sec. H. E. Picken
1878 17½ Sec. H. E. Picken
1879
1880
1881
1882 16 4/5 J. T. Tivey
1883
1884
1885
1886 16 1/2 A. A. Jordan
1887 16 2/5 A. A. Jordan
1888 16 1/5 A. A. Jordan
1889
1890 F. D. Bacharme :16.1
1891 A. F. Copland :16 — 15 4/5 H. L. Williams
1892 F. C. Puffer :16 — 15 3/4 W. H. Henry
1893
1894 15 3/5 S. Chase
1895 15 2/5 S. Chase
1896
1897
1898 15 1/5 A. C. Kraenzlein
1899
1900
1901
1902
1903
1904
1905
1906
1907 Carrells 15:1 & Smithson 15:1
1908 Edwards 15:1 & Shaw 15:1
1909 Edwards 15:1
1910
1911
1912 J. P. Nicholson :15.1 — 15 F. W. Kelly
1913 — :14.8 F. W. Kelly
1914
1915 F. Murry :14.4
1916 — :14.6 Robt. Simpson
1917
1918
1919
1920 H. E. Barron :15 — :14.4 E. Thomson
1921
1922 Al. Knollin :15
1923 K. W. Anderson :15
1924 D. Kinsey :15, L. Snyder :14.8
1925 Ed. Weir :15, G. Guthrie :14.6
1926 L. Dye :14.6
1927 C. W. Werner :14.6
1928 S. Atkinson :14.8, G. Smith :14.6
1929 E. Wennstrom :14.6
1930 S. F. Anderson :14.4
1931 S. Jested :14.2, J. Keller 14.3 — :14.2 F. Beard
1932 — :14.1 Geo. Saling
1933 J. Morriss :14.3, J. Weir :14.2
1934 T. Moore :14.2, S. Allen :14.3
1935 F. G. Towns :14.1
1936 R. Staler :14.1 — :13.7 F. G. Towns
1937 R. D. Osgood :14
1938 J. Humphry :14.3, E. Gedeon :14.5
1939
1940 Ed Smith :14.3, F. Wolcott :13.7
1941 Ed Dugger :13.9 F. Wolcott :13.7
1942 R. Wright :14.4
1943 Charles Hlad :14.4





Sam Allen, :14.3 Hurdler of 1934

(Reading from right to left)

Illustration 1 shows the double arm thrust, the start of the body dip and the forward knee lift.

Illustration 2 shows proper continuation of the dip, arm action and leg stretch.

Illustration 3 shows full stretch at clearance height. Note how close the chest is to the forward knee.

Illustration 4—Note the straight leg, the straight alignment of shoulders, and that the eyes are directed at the top of the next hurdle.

Illustration 5—Note the rear foot is clearing the hurdle in its forward action at the same time as the buttocks, thereby allowing a quick snap-down. (In this picture I think the landing leg should have been snapped down closer to the hurdle, to avoid affecting momentum, and that the arms at this stage of clearance should have started sprinting action sooner.)

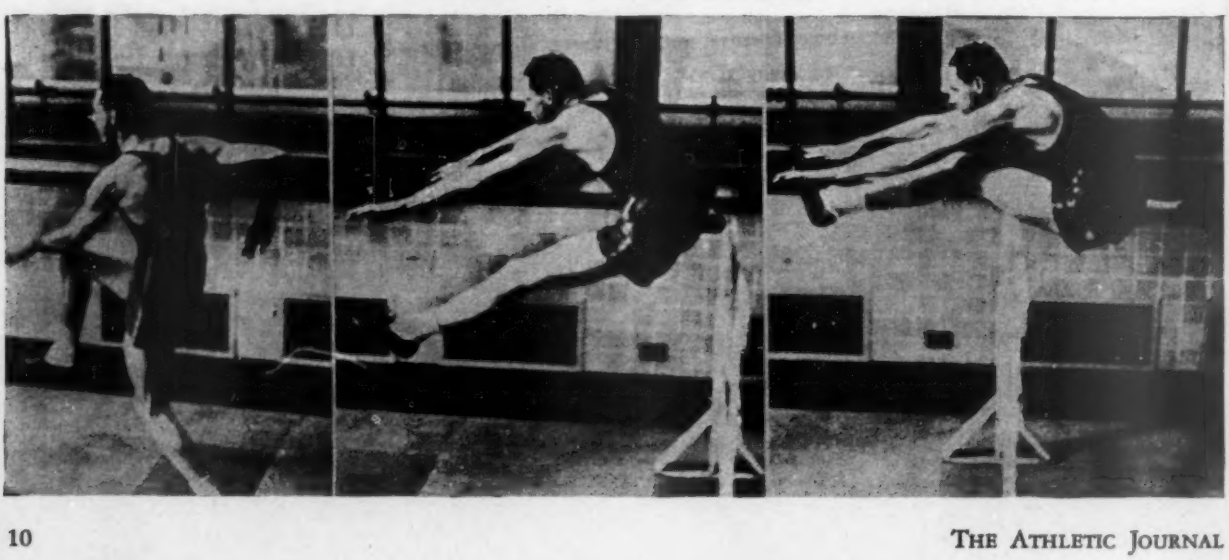
Illustration 6—Note that the straight position of the landing leg has been changed to a slight knee bend, allowing the center of gravity to be thrown ahead of the landing foot. This permits a forceful drive in the first stride. Here the arms have assumed the sprinting action.

Training

Hurdling is a strenuous exercise, putting severe strain on the back, the lower legs, ankles and arches. It should not be undertaken without three or four weeks of general body conditioning, and should become more strenuous during the latter part of the preliminary training season before the regular week-end meets are in progress. It is during this period that form and balance should be perfected to the end that, in a race, these essentials will become almost mechanical. Part of the work should be done for form alone, and part should be done running with other hurdlers, so that the athlete grows accustomed to the sight and proximity of rival contestants.

Because of the rapidity and abruptness of the action in hurdling, the daily warm-up processing must be very thorough. This of course, also, holds true before a race. The stretching exercises peculiar to hurdling should be performed daily to develop the necessary suppleness of hip action. This consists of sitting on the ground in what is essentially the position of clearing the hurdle and in dipping or bucking deeply forward and downward from the waist. The leading leg is extended straight out in front with toes up, and the other leg is out to the side in the clearance position. The opposite arm is extended forward with palm down parallel to the leading leg while the other arm is extended backward. The body is dipped forward from the waist as far as possible. Many other variations to produce stretching and suppling may be employed, and should take place near the beginning of practice, following the preliminary jogging warm-up. Among the best are the hamstring and back stretching exercises, standing with the feet together, legs straight, and touching the ground with the hands; and the wood chopper's exercise, from a stride-stand position, the athlete touching the left foot with the right hand and the right foot with the left hand. The leading leg is kicked high in front of the body, and the opposite hand extended with the body lunge. Standing on the leading leg, the hurdler works the other leg over a real or imaginary hurdle. This should be combined with body buck and

(Continued on page 29)



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JOHN L. GRIFFITH, Editor

Relay Meets

SINCE the Pennsylvania Relays were started a half a century ago, a number of games of similar character have sprung up in different parts of the country. Perhaps the Drake Relays, next to the Penn Relays, are the oldest of these games.

The originator of the Drake Relays was the track coach at Drake University some thirty-five years ago. Each year in the winter time, he would be invited to send relay teams to indoor meets conducted in St. Louis, Kansas City, and Omaha. Invariably the managements of those meets or tournaments paid the expenses of the coach and the track teams that accepted the invitations, extended to them to compete in one or more of these sets of games.

With that in mind, this track coach conceived the idea that track should be financed the same way that the team sports were financed. He knew that, when he drew up a contract with a rival institution for a football game, it was customary for the two competing institutions to split the profits from that game. The visiting team was always guaranteed expenses, at least, when it agreed to compete with a rival institution in football.

It was customary, however, in track circles, for the promoters of a set of games to offer medals as prizes to the winners with the understanding that the competing institutions would pay their own expenses. If there was any money left, it went to the games committee which promoted the meets.

When the Drake relays were launched, contracts were signed with the competing institutions and thus the relay meet was put on the same basis as other intercollegiate sports.

In the early days, at least, the contestants were willing to compete in the Drake Relays, even though costly prizes were not offered the winners. Since that time, the Drake committees have prorated the expenses of the competing institutions, and have also offered attractive prizes to the boys who won, or placed in, the different events.

There are two things that should be observed. First, track should be conducted on a sound financial basis. While we are not advocating the discontinuance of prizes for the winners in track, we are reminded that the boys, who compete in basketball and football, are not given special prizes if they win. There is no reason why track athletes should be given gold watches and other expensive prizes when the same type of prizes are not given to boys on other intercollegiate teams. The main thing these days is to take care of the travel expenses of teams that are to compete in different events.

The second point to emphasize is this; namely, that the people generally like relay races and will attend well-conducted relay meets in larger numbers than they will attend, let us say, dual meets in the winter or spring. Perhaps we would be wise to promote more and more relay meets, with some track and field events on the program, than we have been doing in the past.

There is no objection to conducting track meets or other contests which have very little spectator appeal, if these events can be financed from outside sources. For fifty years, however, the coaches and athletic directors have been forced, rather largely, to finance their own athletics. This being true, it is always necessary to think somewhat of the spectator appeal of the sport in question. If we look at the matter this way, track events which are built around relay races have more spectator appeal than those meets that are conducted along the old, traditional lines with so many track events and so many field events on the list.

The Story of Wat Misaka and a Basketball Crowd

OF THE many interesting features connected with the National Collegiate Athletic Association National Basketball Tournaments this year, one stands out above the others. It concerns a Japanese boy who played on the wonder team from Utah, the team that won the Western Play-offs at Kansas City, later won the National Collegiate Tournament at Madison Square Garden, and, a few days later, defeated the winner of the New York Invitational Tournament.

We will let Clyde McBride, veteran sports writer on the Kansas City Star, tell the story in his inimitable way.

"Listen, Tojo and Hirohito and you Nomura and you Kurusu, and all the rest of you heathen sons of heaven, you won't understand this, it'll be far over your pagan heads, but, even so, you ought to hear about it.

"On the University of Utah basketball team there is an American born Japanese boy. His name is Wat Misaka. He's a little fellow, only five feet, eight inches tall. He has been here with his basketball team. In fact, he played with his team on our Municipal Auditorium floor last Friday and Saturday nights, and, listen, Tojo, this Japanese boy received the plaudits of a typical American sporting crowd, and it's about that ovation we mean to tell

you and your double crossing pals, Nomura and Kurusu, even though you won't understand it, because it's something altogether apart from the nature of your breed.

"This little Misaka boy, American born representative of your race, Toj, caused not a ripple of resentment through the crowd that comfortably filled the great hall. There may have been some who wondered about the boy and how he felt about things, but the fact that the other American college kids, his own team mates and the college athletes, he was opposing, held him as one of their own was enough. There was, of course, no murmur against him. Instead, he received his share of polite applause when the time came for his introduction just as did all the other players.

"You'll not be able to understand even that, Toj and Normura and Kurusu and all the rest of your perfidious countrymen, so how could anyone expect you to understand what happened late in the game between Utah and Iowa State.

"Little Misaka came into the game again for his team along in the second half, when the play was running from rough to rougher for the Utah boys. They had seen a healthy lead dissipated while the Iowa State boys had come rushing from behind. It seemed that the tide of the game was turning definitely from Utah toward Iowa State. Ten minutes of play remained, and Iowa State had forged a two-point lead for the first time in the game. That's when little Wat Misaka came in and shot a goal from the field to knot the tally at twenty-eight and twenty-eight. But that wasn't all. Came the ball into his possession a short while later and again he wheeled down court and flipped the casaba through the netting. Very definitely he was putting Utah back in the ball game. Who will deny it if we say that the play of the Jap kid at this stage of the game whipped his team mates back to the spirited rally that was necessary? That's what we believe little Wat Misaka did, and a few minutes later the crowd gave evidence that it felt the same way about it.

"That was when the kid went out of the ball game on four fouls. We saw the foul that put him out. It was unintentional. In fact the kid didn't know he was making it. He was speeding down court and got in the way of the Iowa State ball-holder. His back was turned, so he didn't know until the collision came.

"As the Jap kid went off the court, his coach rose to meet him and so did his mates on the bench, even as his playing pals on the floor had patted his back in a friendly, approving way, as he left the game. Iowa State players also expressed regret at his departure.

"But that isn't the main theme of this thing you'll never understand, Toj, you and your countrymen and their distorted idea of things that are right. The main item, Toj, was the attitude of the crowd. It was a crowd pretty much for Iowa State naturally, Iowa State being our own sectional champions or co-champions, but that crowd forgot partisanship in ringing its sounding board for little Wat Misaka. It wasn't as great an ovation as we gave the American flyer, Major Robert E. Galer, a few years ago on a similar occasion, but it was a splendid recognition for a worthy competitor in the good American Way. You couldn't understand that either, Toj, you or Mr. Hirohito's subjects, because you're several centuries behind the civilized world.

" 'Where else could a thing like that happen?' said Walter Rouzer, after he had joined the crowd in giving the Jap boy a hand.

"Well, it might have happened in Australia, or England, or Canada, or in any other highly civilized country where sportsmanship is known and practiced, but you Hirohito's, you Tojos, you Nomuras and you Kurusus wouldn't be understanding because it represents something you haven't caught up with yet in the march of civilization."

Football Strategy and Aerial Strategy

ACCORDING to Lieutenant Commander Harold S. Larson, who played football at Annapolis in 1932, 1933, and 1934 and was on the boxing and lacrosse teams, football strategy and strategy in the air service are similar. Commander Larson spoke before the Touchdown Club in Washington recently and, according to Tom McBride's report of his talk, stated that he and other former college football players had actually diagramed football plays and used them successfully against the enemy in aerial fighting. According to this report, "More than one Zero pilot was sucked in on mousetrap plays with the bait a seemingly vulnerable navy plane."

"The focal point between aerial combat and football," Larson pointed out, "is in the co-ordination of attack and defense. Each pilot knows his job and knows what every other pilot will do on the play. Sometimes the team will give up what seems to be a superior position to exact the element of surprise, the old Statue of Liberty play, or a reverse and lateral, in effect."

Are They Prophets or Merely Hoping?

LAST month, Charles Galiher, the University of Iowa's business manager of athletics, received a post card mailed January 11. The card was signed by two American boys who are prisoners of war in a German camp. These two men were ordering tickets for the University of Iowa's homecoming game next fall. They stated that upon their immediate return to the United States, they would forward money for the tickets. They wanted seats on the west side of the stadium. Naturally, the Iowa men will see that these boys have the best seats in the stadium next fall, when and if the fortunes of war are such that they can get back in time for the game.

Learning to Be an Infielder

By Joe Gargan

Director of Athletics, Kingswood School, West Hartford, Connecticut

THE way to learn to be an infielder is to learn how to throw, to field, and to cover your base properly. These are the fundamentals. You need a clear idea of how each fundamental is executed and a great deal of practice to form habits of doing it correctly. The one thought in all of these fundamentals is that of simplicity. The simple way is the best way. Lost motion, fancy tricks, and unnecessary action do not belong in your learning process.

Good technique is very important. If you know how to use your body correctly, you can develop skill with practice. If you do not know the right way to do it, you will acquire bad habits that hinder your development. There is one way to throw in which you make the best use of your throwing equipment, but there are many ways in which you might otherwise waste power and speed. It is obvious that the development of your throwing must depend upon doing it in the right way. There is a right way to field grounders, and there are, also, faults which you will acquire unless you know the way to overcome them. There is a right way, and there is a wrong way to cover a base, and you will never be able to cover it properly unless you know the right kind of footwork.

These fundamentals are the "tools of your trade" of being an infielder and you must learn how to use them.

In addition to knowing how to make a play, you must also learn what play to make. This means that you must know where to take your position and where to move in relation to your team mates. So-called "inside baseball" at times makes this appear complicated and confusing. Keep it simple. If you know where you are to throw, if you always place yourself close enough to that point to make a good throw, if you know what base you are to cover or back up, and if you are in position to do so on time, you will be carrying out your duties. Later you will come to anticipate plays and react to situations more clearly because you have experienced them before.

As an infielder you must learn the following fundamentals: 1. to throw; 2. to field; 3. to cover the bases; 4. to play position.

Throwing

The most important thing for you to learn about throwing in the infield is that *your throws should be made with a good overhand motion.* Many exceptions will occur when it will be necessary to throw without straightening up, or to make a short, underhand toss, but for your regular throws you must stress a good overhand motion. Do not accept the popular belief that the clever infielder must spend most of his practice in developing the ability to get the ball away fast from any position. The ability to get rid of the ball quickly is not the most important fundamental. Your real job is to learn to throw with speed and accuracy, and to make the kind of throws that can be handled easily by your team mates. Later, you may practice underhand and sidearm throws to improve your speed and agility in throwing without straightening up, but this practice must be incidental to the real work of developing and improving your overhand throw.

THIS publication is again privileged to present an article by J. E. Gargan, director of athletics at Kingswood School. His articles in 1937 on Pitching Fundamentals for the Schoolboy were followed by articles on batting, catching, hitting and outfield play, all of which, specific in content, have been most helpful to baseball coaches in the secondary schools.

The good overhand throw is the only type that has all the qualities of speed, accuracy, and easy handling. When the ball is brought back, then well up over the shoulder, and released with the arm extended and with the fingers kept on top, the rotation will give it speed, lift, and carrying power. The flight will be true and it will be a good type of throw to handle. The time taken to straighten up and get into position for this is not so important as the kind of throw that is made, particularly if the distance is great. It is the throw that counts rather than the speed with which you get it away in all but exceptional cases. You should use the overhand throw every time unless, (1) you are in motion when fielding the ball and must throw while off balance, and (2) on very short throws or tosses. Practice it daily until your arm begins to feel heavy.

Watch out for the following points:

1. Be sure to grip the ball properly. It should be held with the first two fingers on top, thumb underneath, and the other two fingers curled at the side. Form the habit of thus placing your fingers, in early season practice by doing this each time you throw the ball after fielding. In the fast action of a game, you do not think of adjusting your fingers, but if the habit is well-established, you will do it automatically.

As the ball leaves your hand, the first two fingers should be directly on top. This imparts the spin that gives the throw lift and carry. If you should turn your hand so that the fingers come off the side, it will cause the ball to curve. Be sure your fingers are on top. Check on this frequently to be sure you are holding the ball correctly.

2. Bring your gloved hand up for balance. As you straighten up to throw, bring the gloved hand up with the ball to shoulder level, bending the arm at the elbow to bring the hand in front of the shoulder of the throwing arm. This position of the arm helps give you good throwing balance. If you leave the arm dangling at your side, it impairs your balance and decreases your throwing efficiency. However, it is a fault that you will naturally acquire, unless you consistently practice bringing the arm up into a position that will give you good balance. The dangling arm is a hindrance to a good throw.

3. Step directly toward your receiver. A most common fault in throwing which you will develop, if you do not guard against it, is that of stepping out of line with your throw. You should step directly toward your target, except when forced to throw while off balance. In case you jump into position, instead of stepping, you should also be sure to get your feet in line with the target. This means that your left foot (right-hand thrower) should come down on a direct line between your foot and the point toward which you are throwing. The common fault is to place the foot down somewhere to the left of this line, and thus destroy the balance and follow-through that help so much in making a good throw. Test this for yourself, and notice the great difference it makes in your follow-through, when you have your front foot in line with the target. In your practice, check yourself frequently to see if you are doing this. Step toward your target and bring the arm up to get the most out of your throw.

4. Follow through. At the start of the throw, your feet should be in line with the target. You have placed your feet in this position by stepping or jumping into position. Now as the throw is being made, bring your leg on the throwing side around and forward, as the pitcher does, and transfer your weight to it as the ball is released. This will give you the follow-

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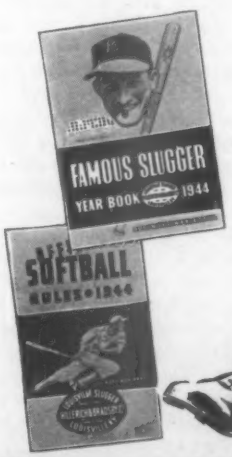

BASEBALL—A "Must" in our armed services' training program will assume even greater importance when victory is won and millions of America's youth return to peace time pursuits—many of them to finish their educations.

Our war experience has taught us a salutary lesson in physical fitness which will not soon be forgotten. And the future of baseball—America's National Game—looms bright over the sport's horizon.

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through with your body and add power to your throw. Do not let the foot remain back, and act as a drag to the follow-through which you need. In so doing, you "pull the string" on your throw and make it inaccurate as well as weak. Practice bringing the foot around on every throw until it becomes a habit.

Helpful Suggestions:

1. Whenever possible, throw with a good overhand motion. Practice it daily.
2. Use an underhand or sidearm throw, only when forced to throw while off balance.
3. Grip the ball with the first two fingers on top, thumb directly underneath, and the other two fingers curled up at the side.
4. Release the ball with the two fingers on top.
5. Get your feet into line with the target.
6. Bring the gloved hand up for balance.
7. Follow through by bringing the back leg around.
8. Stop throwing when your arm begins to feel heavy.

Fielding

Playing grounders. Take your stance, each time the pitcher steps onto the rubber, with your feet comfortably spread and one foot slightly advanced. Bend at the knees and hips, and assume a low, well-balanced position with your hands resting upon your knees. Drop your hands forward and downward and take a very short, shuffling step forward with the back foot, as the ball leaves the pitcher's hand. Your body should be low and your hands dangling below knee level as the pitch is made. Move into position in front of the ball as quickly as possible, keeping the body low and the hands close to the ground. In practice, stress the position of your hands, keeping them dangling close to the ground, as you move, or to either side. In going a short distance to the side, do not cross your legs. Slide the body in the direction of the ball by moving the foot on that side first. On balls hit some distance to either side, you must turn and run with short digging steps. When advancing on an angle, always step off with the foot on the side toward which you are moving. Regardless of the direction in which you move, keep your body low and your hands close to the ground. Be prepared to come up with the ball rather than to go down after it.

Try to take the ball directly in front. If you have time to get into position, your feet should be comfortably spread, body low, hands close to the ground and extended forward, and your eyes should be on the ball. You must stress all of these points because they are important. Your feet should be spread enough to give you good balance, as you move into throwing position. Your body must be close to the ground to enable you to field properly. It is wrong to carry the body high and then pounce on the ball as you are about to field it. Stress coming up with the ball, not going down after it. Your hands should be carried close to the ground and extended forward to enable you to field the ball out in front of your body rather than close to your feet. The palm of your glove should *face the ball.* Do not make the mistake of fielding with the glove edgewise to it. Watch the ball into your hands. If your hands are well out in front, this requires only confidence. To develop this confidence, it is necessary to practice at first on a smooth surface where the ball will not take unexpected bounces. Later if you find that you are failing to sight the ball into your glove, go back to practicing on a smooth surface; stress watching the ball, until you have overcome the fault of taking your eyes off it.

Constant practice in fielding grounders is necessary, and in all of this practice, it is important to emphasize keeping the body low, the hands close to the ground and out in front of the body, and the eyes on the ball.

Helpful suggestions:

1. Take your stance each time the pitcher steps onto the rubber.
2. Assume a low, well-balanced position with your feet comfortably spread and one slightly advanced.
3. Drop your hands forward to a point below your knees, and take a short shuffling step forward with the back foot as the ball is released.
4. Get in front of the ball. Do not field it from the side unless forced to do so.
5. As you move into position in front of the ball do not straighten up, but keep your body low and your hands close to the ground.
6. In moving to the side, do not cross the legs.
7. In fielding the ball, keep the hands to the ground and well out in front of your body.
8. Your heels do *not* need to be together. Keep your feet comfortably spread to maintain good balance and throwing position.
9. Face your glove toward the ball.
10. Watch the ball into your hands.
11. Keep your body low and hands as close to the ground as possible in moving toward the ball. This will enable you to come up with it and avoid the fault of pouncing as you attempt to field it.
12. Early practice on a smooth surface will help you learn to watch the ball into your hands, and give you the confidence needed to handle grounders successfully.
13. Wear a cup supporter. You will find that it gives you confidence in playing hard-hit balls.
14. Practice the following constantly: 1. body low; 2. hands close to the ground; 3. field the ball out in front where you can see it; 4. watch the ball into your hands.

2. Playing fly balls. If you have the time to do so, take your position under the ball so that it will strike you directly between the eyes. Catch it with the hands cupped well above the face, the backs of the hands toward your face. This is the simplest way of making the catch and the one you should use whenever possible. Be careful not to get too far under the ball, and thus be forced to reach back for it. Keep in mind that any ball hit high will tend to curve toward the infield because of its rotation. Keep the direction of the wind in mind on any high fly.

The other way of making a simple catch is to take your position under the ball, so that it will fall directly in front of your body. In this case the hands are held shoulder high, well cupped and with the backs toward the ground. You must practice this way of catching, also, because you will use it in making running catches. Generally speaking, you should catch the ball with the backs of your hands toward your face on standing catches, and with the backs toward the ground on running catches.

On line drives, the important thing to do it to get your gloved hand in front of the ball, either to catch it, or to knock it down. The common fault in playing line-drives is that of leaping or diving for the ball too late. Keep in mind that the ball travels fast, when hit on a line, and that you must go for it at top speed.

On high flies, you should attempt to get to the spot, where the ball will land, as quickly as possible, rather than try to time your approach with the descent of the ball. If you reach that spot and "camp" under the ball, you will be in a better position to judge it, and have a chance to correct any misjudgment before it is too late. Play "pop" flies in the same way whenever possible. In many cases these must be caught on the run because you will not have time to get under them.

On short flies to the outfield, you must turn and race back to the point where you judge the ball will land. Concentrate on your run, then, as you approach the spot, look upward to locate the ball. Run with short digging steps and use your arms vigorously. Do not run with your arms outstretched. Keep in mind that the outfielder has the right-of-way and let him take any ball that he can reach.

If you are forced to attempt a catch near some obstacle, such as a bleacher, run with your eyes upon the obstacle, then glance up to locate the ball as you approach the point where you expect it to descend. This will allow you to approach the obstacle with confidence, which you would not feel if you kept your eyes on

(Continued on page 28)

HIS THROWING ARM SCORES IN THE BIG GAME, TOO!

● Many American fighters were baseball players. In this great American competitive game they trained their eyes to see accurately. They developed timing and coordination—the ability to run, catch, hit, and to throw with amazing precision. Now this skill—this accurate timing and precision throwing—are helping them to bag Nazis and Japs—in Italy and in the islands of the far South Pacific.

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Basketball of 1944

By Nelson W. Nitchman

Lieutenant, U. S. C. G. R., Formerly Coach of Football, Colby College

The New York Invitation Basketball Tournament Semifinals

THIS year, in the highly colorful annual spectacle, four very fine teams remained when the semifinals were reached. In the opener of the semifinal games, St. John's of Brooklyn eked out a win over strong Kentucky who dominated most of the game. In this affair St. John's began the game employing a 2-3 zone defense which the Kentucky team penetrated with considerable ease through the method outlined below and shown in Diagram 1.

The ball was shipped in by either guard to the post man who relayed it to either forward, cutting as shown. Sometimes the center faked the relay and used the pivot shot, going to his left or right equally well. All three inside men followed hard in attacking this defense.

St. John's hurriedly changed to their switching man-to-man defense after Kentucky had scored three baskets. Kentucky's offense was of the slow, deliberate set type with the guards advancing the ball, the center on the post either in the outer half of the keyhole or halfway in from the outer edge of the circle toward the basket. Coach Rupp wisely played his three tallest men inside with Tingle, a shifty, good right-handed shot at left forward, Shu, a fine left-handed shot at right forward and Brannum, a pivot man with deception galore and great rebound ability playing the slot. This offensive set-up gave them splendid rebound strength of which they took due advantage for all but the last several minutes of the first half. Some of the plays which they executed very nicely are shown in Diagrams 2-7.

Kentucky generally used the play shown in Diagram 2 when the defensive men on the guards crowded them. Frequently the guard, pumping the ball in, would be the sole cutter. Obviously, the pivot man teamed with either man or faked return passes, pivoted and shot.

When the defense man on Tingle, left forward, crowded him, he either faked across the center and reversed with the ball to the outside or, conversely, he shiftily faked outside, dribbled across to the middle, and employed the one-handed push shot.

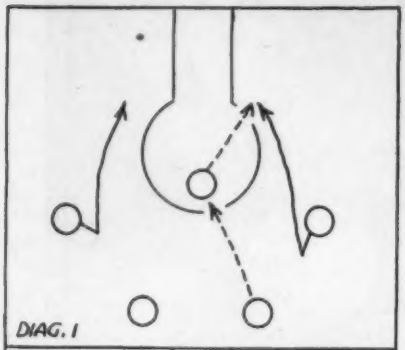
From the opposite side of the floor Shu operated likewise and twice advantageously used his left-handed push shot from the edge of the free-throw circle.

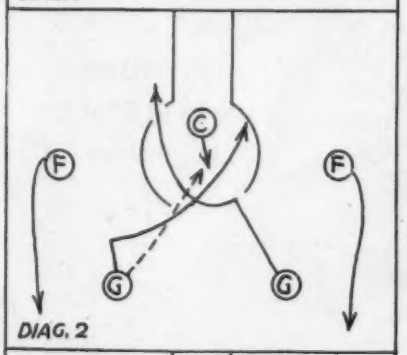
Kentucky worked the play shown in Diagram 4 consistently with great effectiveness. The post man shot off this play or fed either of the scissoring men, also occasionally shipping the ball to the outside guard who had gone down as far as the free-throw line.

As a companion play to that shown in Diagram 4, Kentucky worked the delayed maneuver shown in Diagram 5, in which the second guard around was fed on the outside.

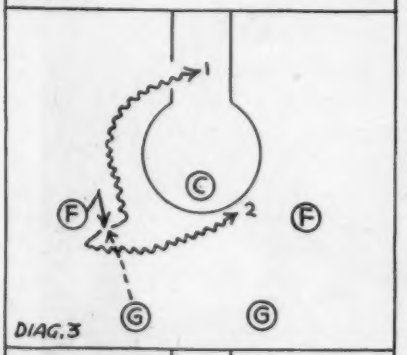
Diagrams 6 and 7 show Kentucky's out-of-bounds play. A foul for "picking off" was called on the one shown in Diagram 7.

(Continued on page 22)

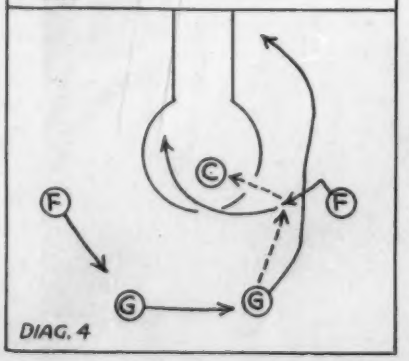

DIAG. 1



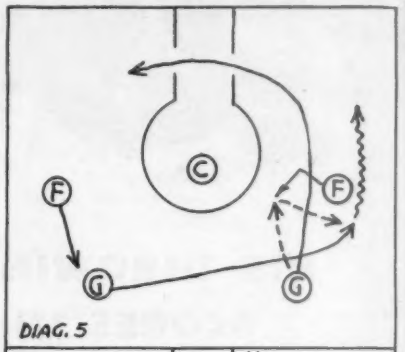
DIAG. 2



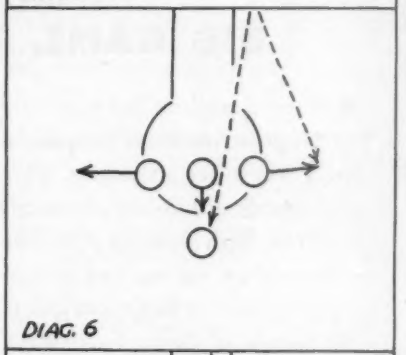
DIAG. 3

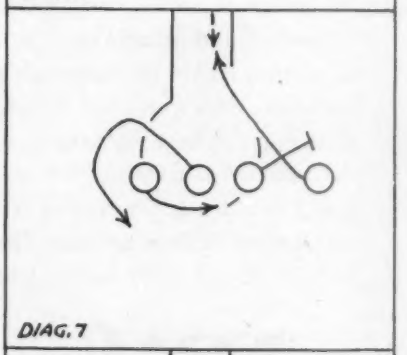


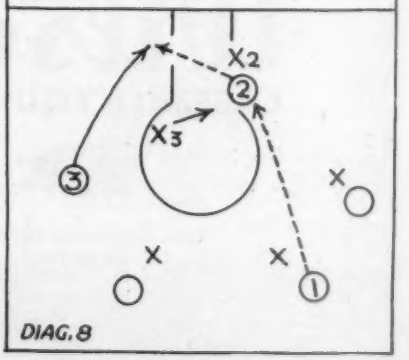
DIAG. 4



DIAG. 5


DIAG. 6


DIAG. 7



DIAG. 8

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Friday, April 28

WELCOME DES

Drake University and the Drake Rel mittee
athletes and coaches of the univers eges a
to attend the thirty-fifth annual D ys.

The Relays will be held April 8. Ath
leading universities and colleg wa hig

Streamlined to meet the Nav r leav
Relays will feature high sc ls on F
university and college ev aturd
ice men and teams will n the u

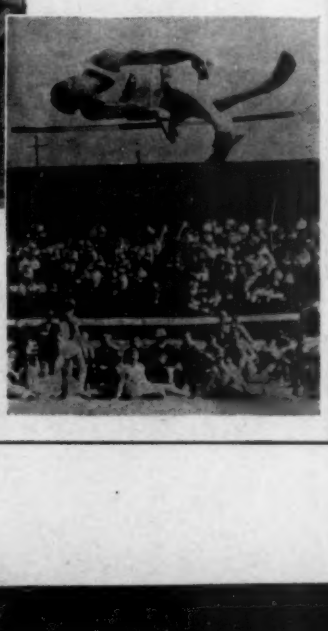
Founder
John L. Griffith

Director
M. E. (Bill) Easton

RALPH TATE

Left — Voted the ou ing individual performi the 1943 Drake Relays Ralph Tate, Oklahoma A gie ace, who took first in both the 120-yard h i g h hurdles and the broad jump.

PETE WATKINS



Right — A sensation of the 1943 Drake Relays was Pete Watkins, Texas Aggie skyscraper, who blasted the oldest standing Drake Relays record, the 21-year-old high jump mark, with a leap of 6 feet 8 inches.

Welcome — a Wel to Des Moine rake

★ ★ ★

Progra Ev

Special Event College

440-Yard Dash, 100-Y Yard Rel Dash, 120-Yard H Mile Re Hurdles, Two-Mile R ley Relay High Jump, Broad Ju Com Pole Vault, Shot P Univer Discus and Javel College Throw. Mile and Relays.

High Se

University Secti

440-Yard Relay, 8 Yard Relay, Mile Re Two-Mile Relay, a Sprint Medley Relay.

FIH ANNUAL
C RELA

Saturday, April 29

E DES MOINES

ke Rel mittee extend a cordial invitation to
nivers eges and high schools of America
ual D ys.

April 9. Athletes from the country's
colleg wa high schools will compete.

e Nav r leave rule, the 1944 Drake
igh sc ts on Friday, April 28, and
ge ev aturday, April 29. Serv-
s will n the university section.

We'll Help You Make Your Reservations

The Headquarters Chairman of the Drake Relays Committee will be glad to make hotel reservations for coaches and teams. For further information write Director M. E. (Bill) Easton, Drake University, Des Moines 11. Ia.

—a Welcome—
loine rake Relays

★ ★ ★

ra Events

vents

College Section

100-Y Yard Relay, Mile Relay,
rd H Mile Relay, and Sprint
Mile R ley Relay.

Combined University and College Section

ad Ju Mile and Distance Med-
hot P Relays.
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ial Events—100-Yard
, 120-Yard High Hur-
High Jump, Broad
, Shot Put, Pole Vault,
ns and Football Throw.
Sectio ys—Sprint Medley Re-
ay, 8 440-Yard Relay, 880-
le Rel d Relay, Mile Relay and
ay, a Mile Relay.
Relay.

RALPH M. HIGGINS

Referee of the 1944 Drake Relays will be Ralph M. Higgins, track coach of Oklahoma A. and M. In his nine years as mentor of the crack Aggie teams, Higgins has brought to the Drake Relays such stars as Forest Efaw, Jimmy Metcalf, Don Boydston and Ralph Tate.

Basketball for 1944

(Continued from page 18)

Kentucky's defense was the assigned man-for-man, sliding defense. The men on the side opposite the ball sagged off and this proved costly a few times when St. John's employed the play shown in Diagram 8.

X3 on defense sagged off to aid 2, but he erred by taking his eyes totally off his own man, to whom 2 quickly shipped the ball for a score.

Kentucky kept only one back on fouls, relying on the shooter to retreat hurriedly to assist this man, if possession were lost.

St. John's offense contrasted sharply to that of its Southern opponents. It employed a post man, generally pretty close to the basket. The four other men played the professional style which Joe Lapchick himself had played so capably for so many years. St. John's players worked constantly on "give-and-go" plays, frequently getting the ball deceptively into the post man and cutting him off as shown in Diagram 9.

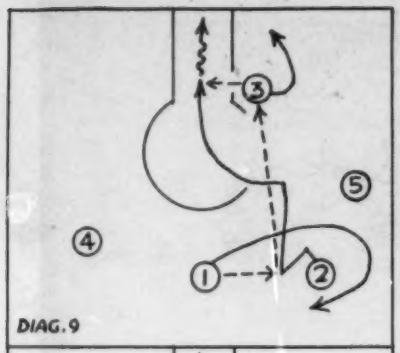
One moved the ball to 2 and screened. Two fed three and cut as shown. Three fed 2 or faked to feed, and took a turn shot.

The play shown in Diagram 10 was a companion play which was used a few times. One fed 3 and 5 cut off of 3 for a pass and dribble-in play.

St. John's used the two out-of-bounds plays, shown in Diagrams 11 and 12.

To assure themselves of victory after coming up to tie the score in the last four minutes, St. John's played a control game, working for only the sure shots. Then Gotkin, their diminutive captain, did a fine job of dribbling and directing the stall game in the last few minutes. Kotsores at forward, Wehr at center and Duym at guard also did fine jobs for St. John's in this contest.

The second game of the semifinals featured De Paul against Oklahoma Aggies and tall, capable George Mikan against seven-foot Bob Kurland. Henry Iba's Aggies rapidly went out in front 15-2 as Kurland and Burdette, rangy guard teamed up to execute some fine scoring plays. The Aggie 2-3 zone with Kurland handling the under-the-basket assignment was at first too much for the De Paul team to cope with, as they attempted to shoot high bank shots to eliminate Kurland's chances of intercepting or deflecting the ball while in flight. Mikan was bottled up well by the Aggie strategy of the weak-side defensive forward sagging deep. That meant that Kurland remained between Mikan and the basket, and the sagging forward in front of Mikan. De Paul employed three in and two out against the Aggie zone, and at the outset took many side shots, some of which Kurland deflected



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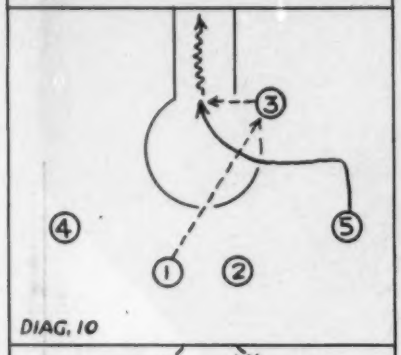

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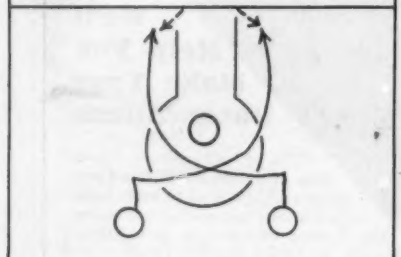
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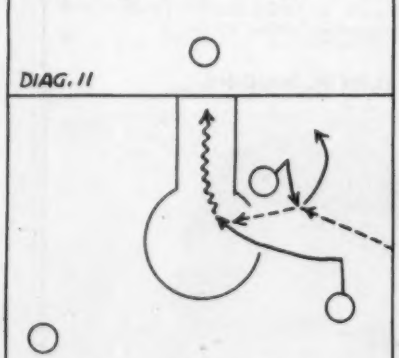
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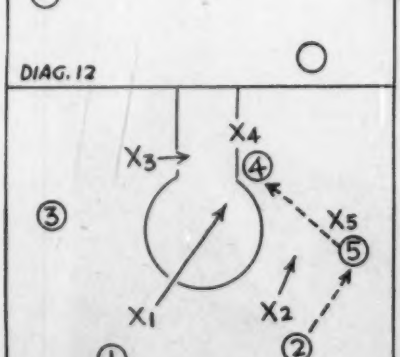

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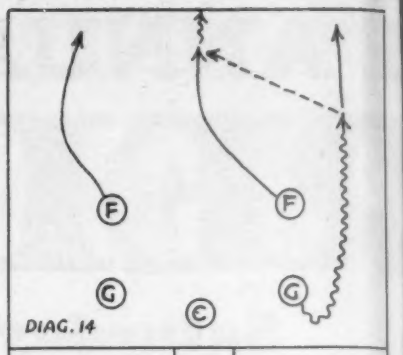

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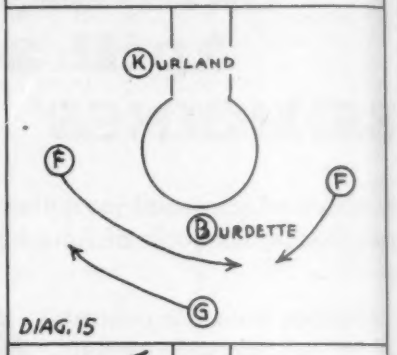

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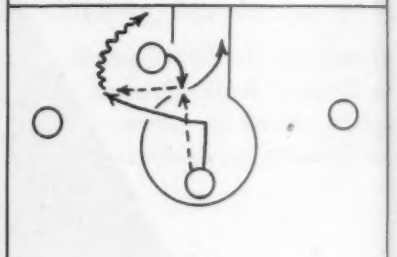
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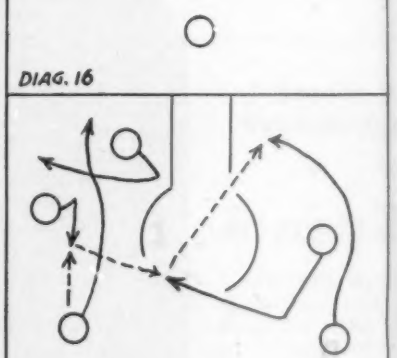
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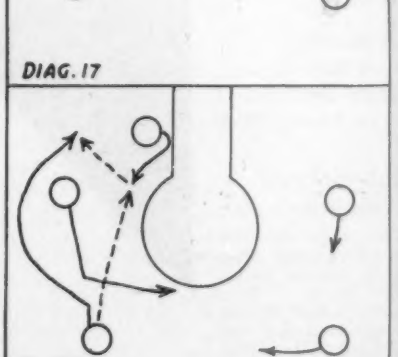
DIAG. 18

and others of which were inaccurate. When the De Paul players ventured to get the ball into Mikan he was expertly "double teamed" although, despite this fact, he managed to score on a couple of nice rebounds. The Aggie zone against De Paul functioned as shown in Diagram 13.

X1 dropped back fast when the ball went into the side man. By so doing he assisted Kurland X4, on Mikan 4.

With the score so heavily against them, Ray Meyer sent in word for his team to use full-court pressure against the A. & M. team. Being equipped with the speed and condition to play this style of defense, the De Paul boys made several timely interceptions and broke fast to score before the A. & M. defense became set. In addition, they moved the ball "around the horn" much faster and capitalized on the sagging of X1 to aid on Mikan by getting the ball ultimately to 1 for a quick shot. Along with this move, the ball was sometimes driven quickly into Mikan a bit to either side of the hoop, and he unhesitatingly slapped it out to the weak-side offensive guard for a quick shot. Dean at left forward for De Paul played a splendid game. On innumerable occasions he received a pass in the left front-court, feinted a shot, dipped his right shoulder and dribbled in for a two-handed underhand lay-up. Toward the end of this tight game with Mikan, already out on personal fouls, Dean directed a stalling game which forced the Aggies out of their zone. With Burdette already out on fouls, Jaquet, a forward, having to be removed on account of a knee injury, and with Kurland incurring his fourth personal, Henry Iba's team had to play the last few minutes with only four men.

The De Paul defense was a switching man-to-man, close-guarding type. Rarely did a small man ever stay with Kurland very long on forced shifts. In this situation, men shifted back quickly unless the play loomed as a scoring thrust. De Paul, like Kentucky, kept but one man back on fouls.

Oklahoma A. & M. used a three-lane break considerably out of their zone. Doyle at right guard frequently drove down the right side and fed the middle man, while the left forward broke down the left lane.

In their set offense, Kurland played the inner post while Burdette set up an outside post which he played after he and Doyle had advanced the ball from the rear court. Doyle and the two forwards shuttled the ball and worked around either post man, as shown in Diagram 15. Both Kurland and Burdette made some fine one-handed shots with either hand.

Burdette and Kurland teamed frequently as shown in Diagram 16. Often Kurland faked the return to Burdette, stepped away from the basket toward the free-throw line and sank a one-hand push shot.

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The Aggies used each of the plays shown in Diagram 17 and 18 once and scored in each instance.

The New York Invitation Tournament Finals

In the final games of the Invitation Tournament, Oklahoma Aggies met Kentucky in the opener, and De Paul met St. John's in the feature.

The Aggies played this game minus the services of Burdette, their star guard, and a starting forward, Jaquet. Naturally they were thus greatly hindered both offensively and defensively. Regardless of this fact, Kentucky played a fine game to defeat them. The Kentucky boys dug the ball off the defensive board and broke fast to score before Kurland could assume his "goal-tending" position. When the Aggie defense was set, Kentucky sent three men in, and had the guards handle the ball rapidly out in front of the zone defense. They either whipped the ball rapidly "around the horn" several times until unhindered side shots were obtainable, or pumped the ball into the post man who quickly shipped it out to either guard for a set shot. As far as this penetration of the Aggies defense was concerned, it was interesting to note that high arch bank shots worked successfully against Kurland's "goal tending." Kentucky also followed up hard and well, relying on the three inside men to handle this detail.

The ball was moved "around the horn" as shown in Diagram 19. The inside three men followed hard after the high arch bank shot taken by F1 in this case.

At times the ball was driven into the center rapidly and flipped out fast to the opposite guard who shot a high arch shot which the three inside men followed, if necessary (Diagram 20).

St. John's played an inspired, driving game to beat De Paul in the finals of this 1944 tournament. Throughout the first half, this was a nip-and-tuck affair between two fine teams and remained so for the first eight minutes or so of the second half. The St. John's boys did a grand job of shielding the De Paul lads out on rebounds. Not only did St. John's capture defensive rebounds well, but broke with great speed to score before the full De Paul defense could retreat. Kotsores forward, or Duym, a guard, oftentimes dribbled down the middle fast, either to shoot, or feed a man in the right-side or left-side lanes as shown in Diagram 21.

If the De Paul defense retreated rapidly, St. John's employed its four man weave plus a post man. The post man played mostly midway between the basket and the free-throw line on either side of the lane. Sometimes the ball was fed to the pivot man, who took a long step toward the free-throw line and used a high arch push shot over the outstretched arms of big George Mikan, De Paul's giant cen-

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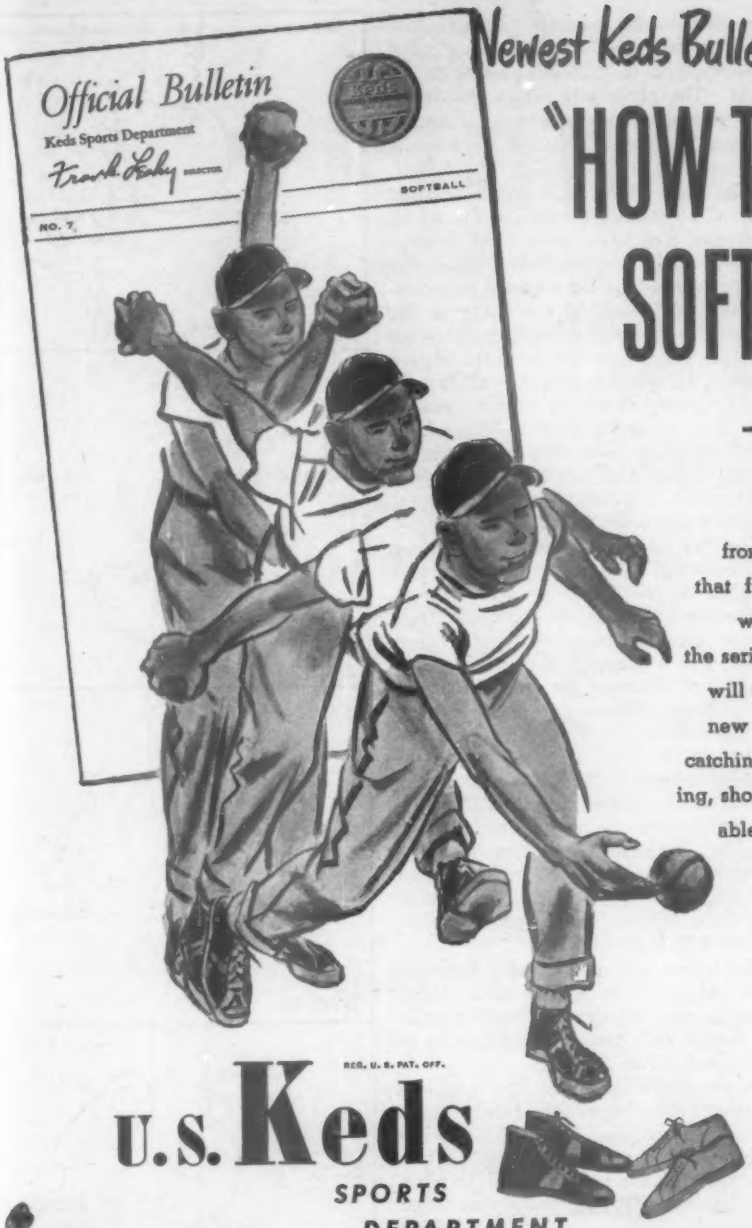

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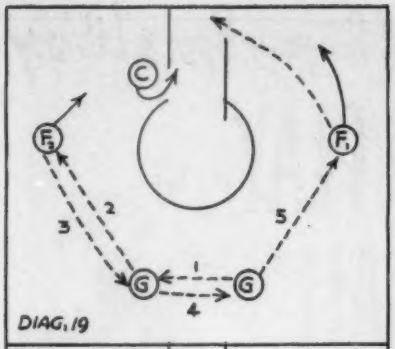
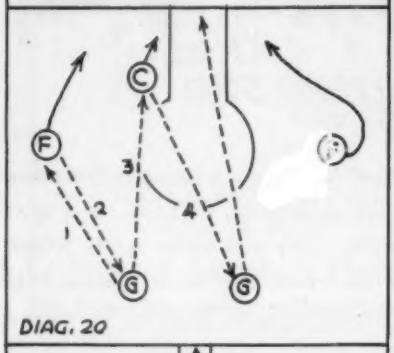


DIAG. 19



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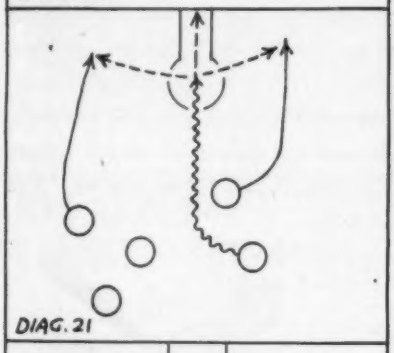
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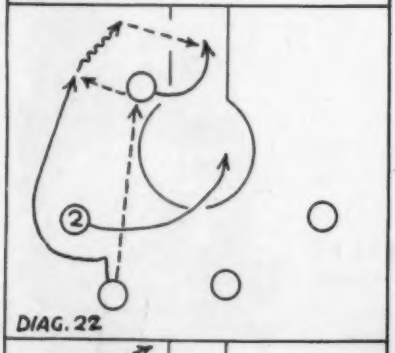

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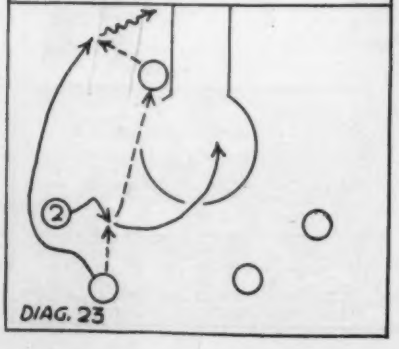


DIAG. 23

ter. Periodically, the pivot man used double fakes to throw Mikan off balance, and reversed with the ball going either left or right. The plays with which St. John's had greatest success, shown in Diagrams 22 and 23, worked best for them on the left side.

The play shown in Diagram 22 was worked at random out of the St. John's four-man free lance game. The original handler took advantage of running the man guarding him into his team mate who momentarily remained stationary in the 2 position. Toward the end of this game St. John's once more led by its diminutive captain, Gotkin, handled the ball rapidly and accurately to keep it from the possession of its opponent. Kotsores' drive, ball-handling, accurate shooting and aggressive defensive play won him the most valuable player award. St. John's used an assigned man-for-man defense mostly.

De Paul's team was comprised of four fast boys and the lanky, agile Mikan who handled the pivot slot very well. Dean at forward was exceptionally shifty and Triptow at guard, endowed with tremendous speed, was a constant threat. De Paul broke fast whenever the possibility arose of "getting in" before the defense was set. If the defense retreated rapidly, Mikan played in the pivot on either side of the free-throw lane. Two other men, generally the forwards, played inside with Mikan, while the other two men handled the ball outside. In the first half, some five plays involving the pivot man and the passer resulted in scores. Generally Dean or Triptow paired with Mikan on these plays as shown in Diagram 24.

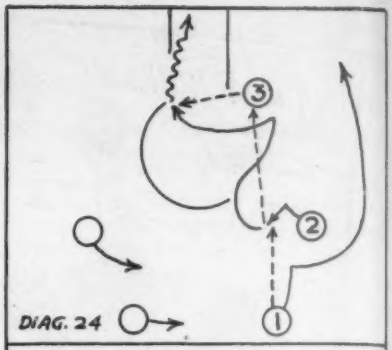
Sometimes Mikan executed a deceptive fake and scored on a pivot shot. Many times he returned the ball to the man in the 2 spot. On a few occasions I drove as shown and Mikan fed him.

In the second half, De Paul used the shuttling type offense with Mikan remaining as the pivot man. Until the time when Mikan was removed on fouls, De Paul was constantly on the heels of St. John's but with him out, St. John's quickly increased their lead. De Paul played the switching man-for-man defense almost entirely, having to make it more aggressive near the end in an effort to gain possession.

As an outcome of this tournament, some interesting observations were made, namely, that "goal tending" can be beaten by fast-break plays which beat the "goal tender" back. It was also apparent that when he started his "goal tending," high arch shots eliminated most of his effectiveness and that when he crowded prospective high arch shooters, he was susceptible to vertical fake and drive-in plays.

The N. C. A. A. Eastern Final Play-off

The National Collegiate Athletic Association Eastern final brought a fine Western Conference representative, Ohio State,



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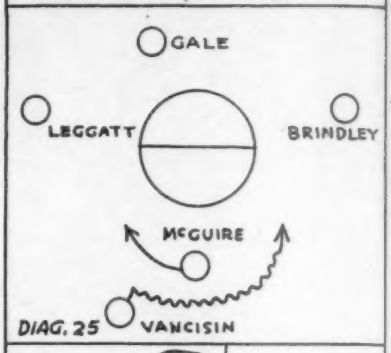

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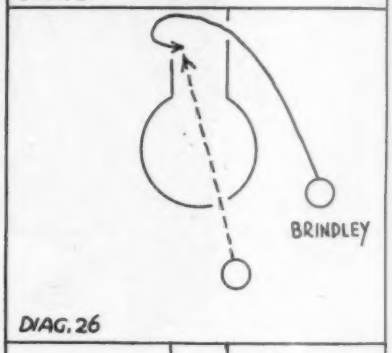

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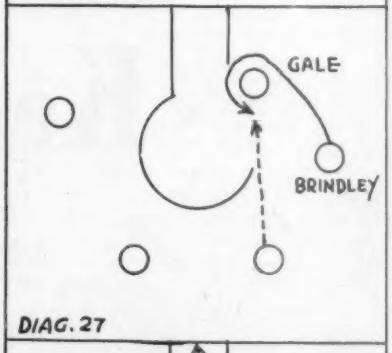

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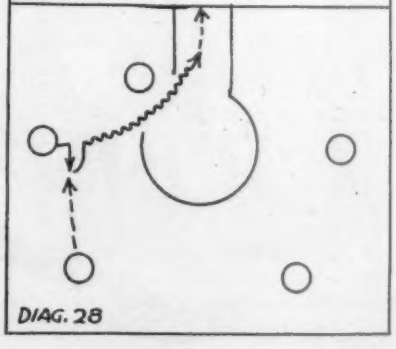
DIAG. 28

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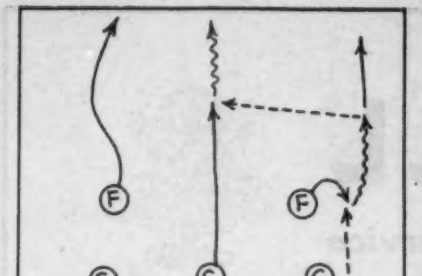
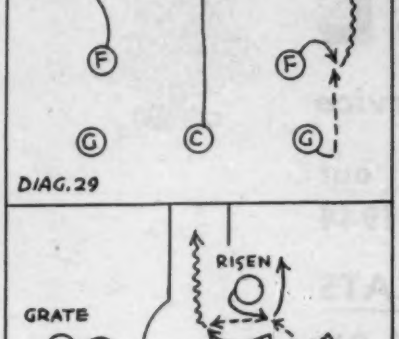


DIAG. 29



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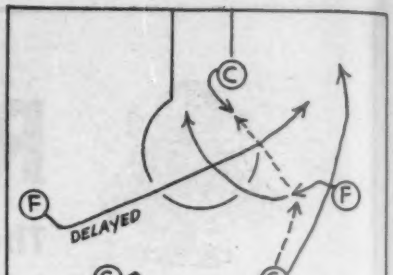

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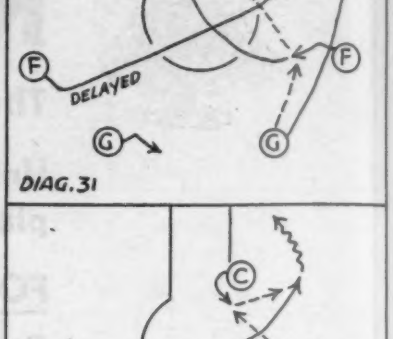


DIAG. 32

against Dartmouth, New England's best. This was a closely contested affair throughout with Dartmouth, the ultimate winner, holding but a slight edge for the greater part of the game. Dartmouth's attack consisted of occasional fast breaks with Leggatt, a forward generally being on the scoring end. By and large, however, their guards, Vancisin and McGuire, both of whom were excellent dribblers and ball-handlers, would bring the ball up slowly. If pressure were placed on these two men by the defensive forwards, they protected the ball from interception by a series of rolls or by dribbling screens as shown in Diagram 25. Vancisin generally dribbled deceptively around McGuire, who was stationary until Vancisin had advanced beyond him.

After the ball reached the front court, it was worked into one of the inside men who maneuvered individually for a toss, or worked with one of his team mates in an attempt to create an opening for a shot. Brindley did some of the finest individual performing seen in the Garden in many years. His reactions were extremely fast, his movements highly deceptive, his passing and shooting superb and his defensive work excellent. His inclination, during most of the game, was to line up in the right corner and break out to the right edge of the free-throw circle. Upon receiving the pass into him, he executed feints to the left or right, or in both directions followed by deceptive reverses in the direction opposite to which he had thrown his man by his faking. If his man were smart enough not to be lured by his feints from this position, Brindley stepped toward mid-court and employed a one-hand push shot. In situations where his man played him loosely, Brindley used the set shot with great accuracy. He very shrewdly resorted to the two moves shown in Diagrams 26 and 27, when closely guarded. As shown in Diagram 26, he cut directly under, and beyond, the basket, received an accurate pass and used a very rapid turn shot. Vancisin or McGuire did some fine feeding on this type play.

As shown in Diagram 27 he used Gale, center, to free himself from his man for a set or one-handed shot. Along with this remarkable offensive exhibition, he guarded his man well and retrieved innumerable balls coming off the defensive board.

Leggatt worked the play, shown in Diagram 28, effectively twice, after which his man sagged off cautiously for fear of a repetition. This move permitted Leggatt then to score via the set-shot medium which he did.

When Ohio State's defense sagged, McGuire popped successfully from outside while Gale and Brindley did well at following up. The Dartmouth defense was the assigned man-to-man, but involved occasional shifting where small men were matched with small. Earlier in the year Dartmouth with a different personnel had a splendid shifting man-to-man defense in which switches were made against practically every screen play, run against them.

Ohio State's offense combined the fast and slow breaks. On its fast breaks, the ball generally went out to the forward on the side on which the ball was retrieved. For a tall, thin boy, Ohio State's center, Risen, broke down through the middle consistently well, whereas the other forward went speedily down the opposite lane to that of the pass-out.

The fast break was most frequently used, as shown in Diagram 29, with the ball being advanced by rapid passes among the three front men breaking in straight three-lane style.

When the Dartmouth defense retreated rapidly, the Ohio State guards, Bowen and Huston advanced the ball. When in the front court, if the Dartmouth defense stayed back too deep, Huston shot accurately from outside. Some of the better plays Ohio State used are shown in Diagrams 30, 31 and 32.

Normally Ohio State lined up with the men in the spots indicated. Dugger whipped the ball into Risen and received a return pass after the cut-off for a dribble-in play (Diagram 30).

The right guard pumped the ball in to the right forward and set an inside screen for the forward who whipped the ball in to the pivot man. The pivot man either shot, after executing the usual fakes, or fed the right guard or right forward. The left forward delayed, and in case there was no play between these three men, he cut off the post man (Diagram 31).

The ball went from the right forward into the pivot man after which the left forward scissored around the screen of the right forward then looked for a pass from the post man (Diagram 32).

These plays were worked from either side of the court. Risen's ability to work so effectively out of the pivot made many of these plays go extremely well. He and Dugger both reversed well with the ball and likewise followed hard and consistently.

Ohio State's defense was the assigned man-to-man. They slid through on screens and sagged off slightly on the side opposite the ball. Dartmouth's quick stops and set-shooting over screens against this worked unusually well. Brindley's versatility and Dartmouth's defensive alertness were the most dominating factors in the victory over the Ohio boys.

Learning to Be An Infielder

(Continued from page 16)

the ball, and will prevent any unnecessary collision.

Call, "I have it," loudly and keep on calling when about to field a fly ball, so that your team mates will know that you intend to catch it. If a team mate calls for the ball, be sure to call to him to, "take it," to let him understand that he has the right of way.

Helpful Suggestions:

1. Catch the ball with the backs of your hands toward your face on standing catches.

2. Practice catching the ball with the backs of the hands toward the ground on running catches.

3. On a high fly, allow for the curve of the ball toward you. The rotation will cause it to cut toward the infield.

4. Be sure to allow for the drift of any high fly with the wind.

5. Get to the spot as fast as you can and "camp" under the ball as it descends. Do not attempt to time your approach with the descent of the ball.

6. Go hard and fast after a line-drive in an attempt to get your gloved hand in front of it.

7. Turn and run with your back to the infield on short flies toward the outfield. Use short steps and vigorous arm motion. Do not run with outstretched arms.

8. Allow the outfielder the right-of-way on any ball that he can reach.

9. Keep your eyes on the object when attempting to catch a fly near a bleacher, fence, backstop or other obstacle. Glance up to locate the ball as you approach the spot where you expect it to descend.

10. Call, "I *have it,*" loudly and repeatedly when about to field a fly ball.

11. Call, "take it," when a team mate goes after one.

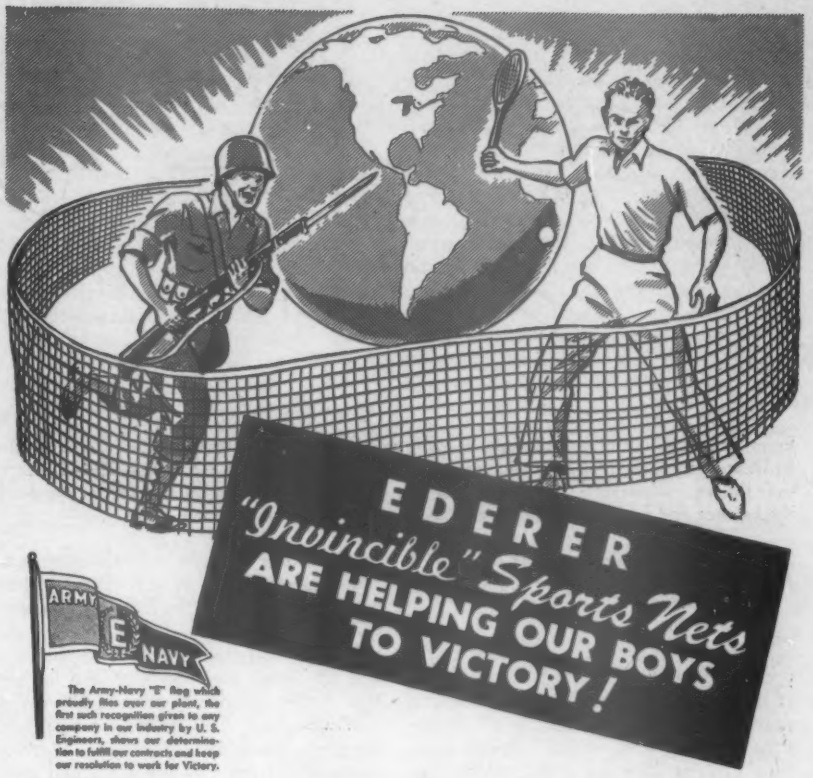
(To be concluded in May)

Essentials to Be Learned in the Art of High Hurdling

(Continued from page 10)

arm thrust. In a sitting position on the mat or ground (clearance position over the hurdle), bucking forward with arm thrust may be practiced. In the same sitting position with thumbs locked together, body is rotated from the leading leg to the side leg with arms fully extended.

Three to seven hurdles are adequate to work over in training with most of the practice over the shorter distance, three hurdles. Once a week is often enough to run through the full flight in practice, and this should not be done later than Wednesday. During the competitive season, the daily practice should grow less intense. On Friday no work need be done, and even on Thursday, preceding an important meet, nothing more than loosening up and a rub-down is advisable. To perfect form, part of each day's practice should be spent taking five strides between each hurdle to perfect quick, close clearance, body dip, and cut-down. This is best done with no attempt at speed. In order to keep the hurdle cadence, a hurdler should plan to run every race, trial or final, at top speed. He should never plan a pick-up or change of pace because many spills are so caused. He should go out to win every race.



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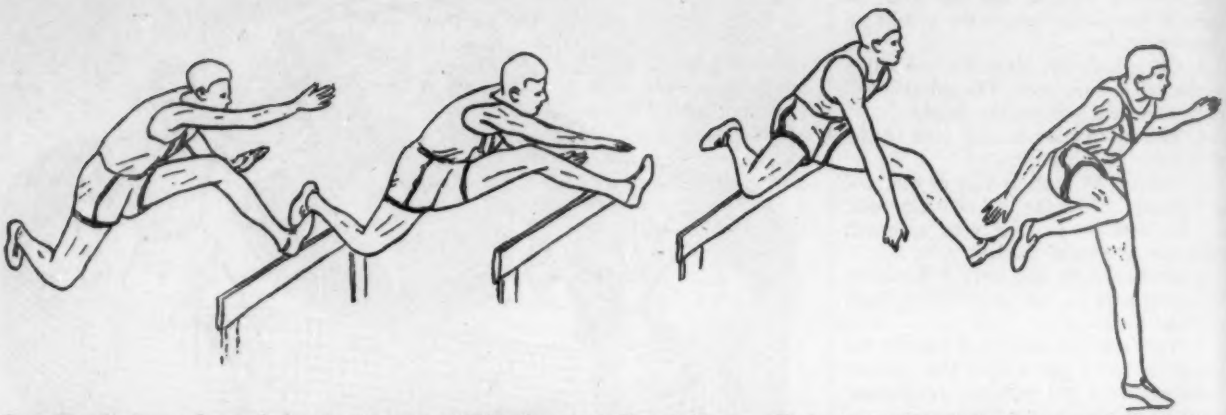


Percy Beard, winner of second place in 110-meter high hurdles, 1932 Olympic Games. Illustration 1 shows body lunge toward the hurdle. In Illustration 2, the clearance, note that the right arm and left leg are well extended over the hurdle, that the body is carried well forward over the leg. Illustration 3 shows the last part of the clearance and the first part of the descent to the ground. In Illustration 4, the landing, the balance and preparatory movements to the first stride after clearing are shown.

A Suggested Schedule of Work for a High Hurdler During the Competitive Season

Monday: In each day's practice warm up. Jog a quarter. Then take a series of hurdlers' stretching exercises. Starting practice. Work on perfecting a fast approach to the first hurdle. Spend some time concentrating on form, taking five strides between hurdles. Work over three to six hurdles three or four times. Take some striding practice and finish your day's practice by running through a fairly fast 220 on the flat.

Tuesday: Limber up with jogging and striding. Spend ten minutes doing stretching, and ground-hurdling exercises. Take the sprinter's practice with the sprinters. Work on approach at top speed. Then work over three hurdles four or five times. Concentrate on form—lunge, quick, close clearance, snapping the rear leg through, and the quick snap-down of the leading leg. Finish up with a sprint of 150 yards.

Wednesday: The usual warm-up and hurdler's stretching exercises. Starting practice. If the legs feel tired and sore, do not work on the hurdles. Spend time on striding and suppling exercises. Take two runs of 125 yards, sprinting the last twenty-five. Ease up a little on the work. If the legs feel good, go through a flight of ten hurdles after the usual warm-up.

Thursday: Usual warm-up of jogging, suppling and stretching exercises. Take a few starts with the pistol, three fast heats over three or four hurdles, or a time trial over half the distance. To get the stamina for running this race, finish up each day's work-out by swinging through 150 yards, pulling up the last twenty to a sprint.

Friday: Light work of limbering-up exercises and jogging or complete rest.

Saturday: Competition or time trial.

Note: Before running the race, warm up thoroughly with jogging, striding and suppling exercises of the hip and back muscles. Take a few trials over three or four hurdles to get the feel of the track, to perfect your approach, and to establish hurdling cadence. Time your warm-up, so that there will be no waiting.

War-Time Educational Policies

By Randolph W. Webster

Acting Dean, School of Physical Education and Athletics, West Virginia University

WE ARE still engaged in a world-wide conflict, fighting for the democratic way of life which we cherish most dearly. The end of this struggle cannot easily be predicted. It is hoped that the war will be over soon, but it might last many more years. Whenever the war is terminated, we must be prepared, politically, socially, economically, and educationally to meet the problems which are sure to arise in the post-war period; in fact, problems in many of these fields are presenting themselves now, solution of which cannot wait until after the war, but must be studied immediately. Many agencies and institutions in these areas are studying the effects of the war upon their people, and in the light of these investigations are endeavoring to formulate plans to take care of current changes in society and those which are most likely to occur after the war.

Chief school officers in the general educational field are helping to lead the way in this investigation and are trying to discover the proper methods and approaches for the solution of these problems. Principal officials in the profession of physical education are alert to the conditions of this period and are formulating plans which will assist in the reconversion of people, trained in the ways of war, to people, trained for pursuits of happiness in peace time.

The need for the formation of immediate plans for the future are shown by recent publications which state that approximately 100,000 men are being discharged from the armed forces every month. Some of these men will wish either to commence, or continue, their college careers, or seek jobs in some occupation. Recent information in professional education journals indicates that university and college officials are anticipating extremely large enrollments after the war, and are planning now to take care of this large influx of students by arranging to provide well-trained personnel and adequate facilities.

Perhaps the first step to be taken in this investigation is to find out what are the real problems and what methods can be used in discovering them. Many institutions have appointed post-war planning committees and are gathering information by various methods. Some have sent questionnaires to alumni in the armed forces, as well as to the alumni in civilian life. Others have used special study groups, conferences with the faculties of other institutions, faculty discussion groups, and workshops.

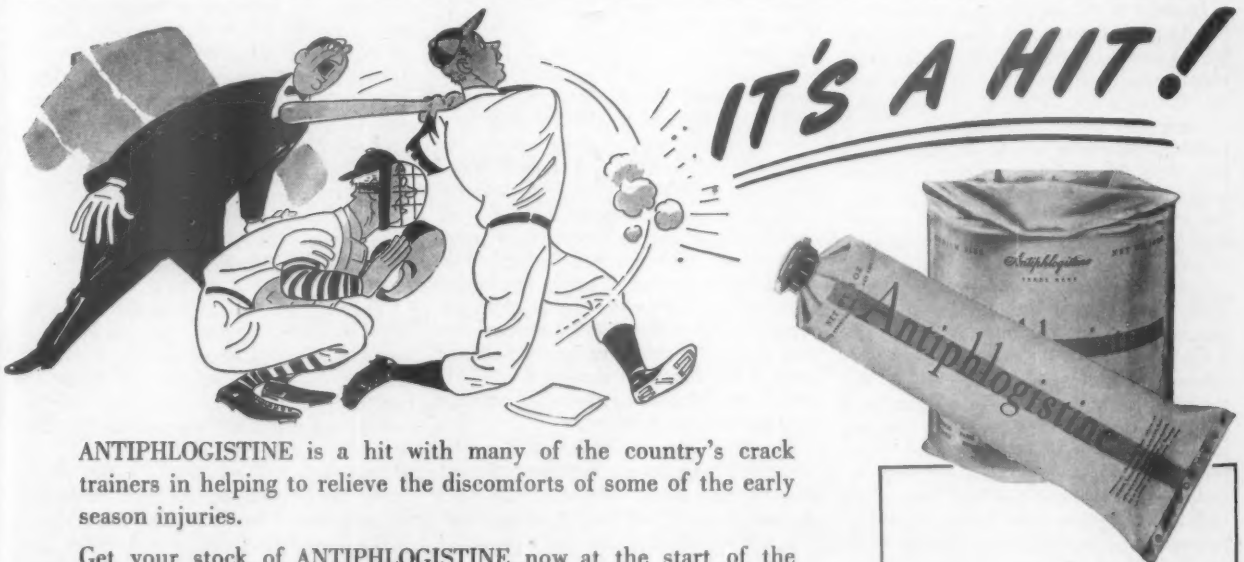
Some of the changes, which these meth-

ods of approach indicate, will be those concerning the modification of present-day curriculums, school buildings and facilities, and the re-training of personnel to meet the changing conditions of society during the time of war emergency and the period after the war. Curriculums will possibly need to be changed from the standpoint of content, methods of presentation and administration. Courses of study must be examined carefully to avoid duplication and overlapping, and to eliminate material which does not meet the needs of students.

In our own field of physical education, it seems reasonable to believe that the curriculum should embrace intensified and applied courses in sociology, psychology, physical reconstruction, physical therapy, recreational therapy, industrial recreation, public health and sanitation, in addition to the regular theory and practice courses and cultural subjects, to meet needs of students returning to both the professional teacher training departments in physical education and the service departments of the institutions. Other items which would be of special interest for investigation are: (1) the amount of physical education credit to be given for graduation; (2) the amount of time to be allotted for physical education; (3) the extent to which provision should be made for the restrictive and the corrective programs; (4) the advisability and amount of provision for school-work-play curriculums, for community recreation, for accelerated programs, for counsel and guidance, and others.

More concise and clear methods of presenting subject matter will be necessary to conform to the accelerated program of the future. The curriculums must be administered in such a way that returning soldiers may enter upon their college careers immediately, without losing valuable time, waiting for the beginning of a new semester. It is thought that some modification of the term plan may offer the desirable elasticity needed in administering courses of study. Larger enrollments and new methods of teaching will tend to antiquate the present school buildings, both in arrangement of structure and size. School communities which anticipate building needs should draw up their plans now and arrange for financial support. School officials who need financial help in constructing new buildings may be able to secure aid from the federal government at the close of the war. According to recent publications, there is likelihood that the federal, state, and local public works will be revived immediately following the termination of the war, and those schools, which have all their arrangements made, and plans drawn up, may expect to receive priority on their projects. Where federal funds are accepted, however, it seems reasonable to expect that the federal government will supervise the construction and audit the accounts. Whether this would be the beginning of federal control of education, remains to be seen. This is a problem for officials of each school community, college or university to determine and act according to their own judgment.

Teachers in the public schools and colleges will need to keep their training and experience abreast of the swift moving events of educational reform. Content of courses will have to be altered and adapted to meet specific néeds and interests; methods of instruction and presenting material will have to be changed; and the students, to be taught, will come to school with different attitudes and philosophies than those of the students before the war. Men and women who have been trained to kill and have undergone the horrors of war will need training and sympathetic instructors to assist them in "unlearning" this war training and habits and to re-educate them to useful places in peace-time society. Good counseling and proper guidance are rightful responsibilities from which teachers must not shirk. It is, also, their duty to see that they are adequately prepared in the proper teaching methods and with the right kind of material for students who return to school during the latter days of the war and the period after the war. Students, particularly the better class, will enroll in colleges and universities with the best trained personnel, new and adequate school plants and facilities, and modern equipment. Adequate preparation should be made at this time.



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Basic Fundamentals in Shot Putting

By Emil G. Schultz

Head Track Coach, Evanston, Illinois, Township High School

Illustration 1—The position assumed just before the reverse. Most of the early season work on form is practiced from this position.

Illustration 2—Deliberately and carefully exacting a perfect balance before the glide across the ring.

IN WRITING about shot putting, it is my desire to bring out a number of important factors which merit considerable attention when coaching this event. Some of those coaching points which will be discussed are selection of competitors, training and practice programs, and the form used in putting the shot.

Interest the Key to Successful Shot Putting

In order to obtain the most satisfactory results in this event, the coach must first have a clear-cut idea concerning the type of athlete who is best suited to realize success in this event. First of all, it appears obvious that a weight event, such as shot putting, requires a strong, sturdy, physically fit, and well-developed boy. I do not here wish to convey the thought that only the brawny individual will make a good shot putter, because there are several other qualities and characteristics which are equally important for successful performance. The most important qualification that any athlete may possess, as far as coaching ease is concerned, is a genuine interest in the sport. Expressing the thought in another way, one could perhaps say that, in all probability, interest is the key to successful shot putting. Once the boy's interest is established, then its maintenance becomes the most important task that the coach faces during the development period of the athlete. In the modern high school, this strong interest is most essential, if the youth is to survive the stress and strain that come from sponsors of the many extra-curricular activities which make a desperate bid for the student's time. The thought that should be uppermost in the mind of the athlete is that of doing an event in championship style, rather than dabbling into too many activities, or becoming a mere joiner without any real accomplishment as the final outcome.

Qualifications

In discussing further the selection of the athlete for this event, I now turn to some physical qualifications which enhance proficiency. In my opinion, the most essential physical quality outside of strength, size and sturdiness, is the one of quick reaction which includes certain aspects of speed. Shot putting is an explosive type of event, and the necessary possession of the quality of quick reaction on the part of the athlete appears to be a foregone conclusion. Some of the other more important physical qualities which require mention are sense of balance, co-ordination and relaxation of muscles. A muscle-bound athlete soon finds out that shot putting is very uninteresting because he lacks co-ordination which is definitely affiliated with muscle relaxation. A boy with rather long arms and large, strong hands usually develops faster and moves more frequently into the championship-performance class. It is not unusual to find that some of the best shot putters are able to run short dashes and compete successfully with second-rate sprinters.

Now that the selection and the type of athlete have been pretty well covered, the attention shifts to training and practice schedules. Excellent physical condition and muscle tone are just as essential for notable achievement in shot putting as they are in any other track or field event. Granting that the last statement is true, then at least a four-week pre-season training period is the recommendation. During this preliminary training season, the athlete should not be permitted to enter into competition or take part in trials for records. The particular kind of exercises, best suited for this early season program, are some of the physical fitness drills used by the service groups to condition their men. The exercises which are especially valuable are sit-ups, squat thrusts, squat jumps, and the push-ups. Additional exercises suggested are running in place, straight forward running, pulling and pushing chest weights, and lifting over-weight shots or metal weights above the head. It should be noted that the exercises chosen for the potential shot putter include some that develop strength, endurance, flexibility of the joints and the muscles of the body, and quick reaction. Without the above-mentioned qualities, the athlete cannot hope to enjoy any appreciable degree of success in this event.

The Practice Schedule

Turning now to the practice schedule, I will discuss it in detail until regular competition starts. The schedule for the beginning two weeks of practice should be planned so as to include each day a twenty-mirute limbering-up period. This warm-up period is most essential and should be a well-established habit for all track and field athletes. In brief, the warm-up exercises, chosen to accomplish the best results, are running in place, bending and stretching movements from the standing and sitting positions, pushing and pulling chest weights, squat thrusts, squat jumps, and push-ups. It is after the limbering-up period that the real conditioning work begins. In my opinion, running is by far the best body conditioner in general use today. The distance recommended for each day's practice is a mile and one half. It is my belief that the most satisfactory

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In a message to the nation recently, General H. H. Arnold, Commanding General of the United States Army Air Forces, thanked the young men of America for seizing air supremacy in every theater of the war. He stated that the A.A.F. had grown, in a remarkably short time, from a mere handful of men into the largest and most powerful air force in the world.

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results may be realized, if the distance is covered by alternating running for fifty yards and walking the same distance. After the completion of the road-work type of training, a period of twenty minutes should be spent on lifting over-weight shots or weights and tossing lightly the shot to develop the hands, arms and shoulders.

During this early period of training, the coach should begin to teach the form used in this event. Gradually, after two weeks, with improvement of condition, more emphasis should be placed on teaching form. It might be well to point out at this time that practically the same program for training should be continued during the third and fourth weeks. The only difference will be that the sprints increase in length from fifty to one hundred yards, while the walks remain at fifty yards. This, in short, means harder work and less rest by walking. There should be an occasional 300-yard run during the fourth and final week. A few trial puts with the reverse may be taken at the close of the fourth week so as to clear the way for teaching the form in its entirety at the beginning of the fifth week. The competition week marks the beginning of the special individual training and practice schedules which should aim to meet the specific needs of each particular athlete. It is important that the coach makes a careful study of each candidate, so that the proper amount of work will be assigned for maximum results. In making the daily practice schedules, the coach should be guided by his knowledge of the boys, gained thus far from observations, and the aim uppermost in his mind should be the maintenance of fine physical condition and proper muscle tone throughout the season. Incidentally, if those aims are realized, then the possibility of injury will be reduced to the very minimum.

Form in Shot Putting

So far there has not been any discussion pertaining to the form to be used in shot putting, because, logically, it should be presented in detail after the athlete is prepared to proceed scientifically with the task. I say scientifically, because, without that kind of an approach, many of the benefits with regard to the small details are not realized and they may make the difference between a champion and a mediocre performer. The athlete should be taught the action of all parts of the body, starting from the tips of the toes to the very tips of the fingers, because these muscles, all in turn, definitely contribute, somewhere along the line, to the act of putting the shot. An attempt will be made to discuss the form in a logical order which should also be the order of presentation to the shot putter.

The shot should be held with the three middle fingers just above the palm of the hand. The little finger and the thumb are utilized to steady the shot and to keep it well balanced in front of the three middle fingers.

The shot should not be permitted to slide down into the palm of the hand in the act of putting, because, when that occurs, the fingersnap is destroyed immediately. The shot at the start is held beside the neck just back of the lower jaw with the chin somewhat raised. The elbow should be down and away from the body at about a 45-degree angle. The opposite arm should be raised above the level of the shoulder and bent at the elbow. The hand and fingers of the left arm should hang limp and be completely relaxed.

I shall proceed now to take up the stance in the back of the ring which is seven feet in diameter. For a right-handed athlete, the right foot is placed just inside of the ring with the left side of the body toward the toe board. It is from this point that the glide starts across the ring to the toe board. While still in the back of the ring, the competitor shifts his weight to the toes of the right foot, the right knee is unlocked and slightly bent, and the left side of the body is bent toward the toe board or in the eventual direction of the shot. The individual now very deliberately and very carefully exacts a perfect balance with the left foot slightly raised forward. The left foot may be raised two or three times in order to secure the balance desired. At what appears to be the psychological moment, the left foot swings back of the right leg, and the body starts to lean toward the toe board. When the left leg starts its return swing, the explosive action in the shot putting starts. The right leg and foot instantly extend, so as to produce a power drive off from the toes of the right foot.

The left leg, in the meantime, is rapidly pulled and swung to the front of the ring about six to eight inches from the toe board. The power-driving right leg, partially aided by the swing of the left leg, moves with lightning speed to a point just past the center of the circle. At this particular stage, the right knee is again bent, the right shoulder back, right hip back, chin up high and the left arm out, and moving back around to the left. The athlete is now in a position to start the reverse. Just preceding the reverse, a number of movements occur simultaneously. The entire body is all cocked for the final action. The right foot is raised up on the toes for another power drive. The right leg straightens out at the knee. The right hip drives forward so as to form a slightly arched back. The upper part of the body rotates with the right shoulder taking the lead. The right arm straightens out at the elbow, and the wrist straightens while the fingers give the shot the final snap before it severs contact with the hand. While this last bit of action is taking place, the power drive from the toes of the right foot is transmitted to the toes of the left foot which aids on the final follow-through

to the very last moment of contact. A rapid exchange of the feet takes place and a reverse is executed to help retain balance, so that the athlete does not step out of the ring and make a foul throw.

So far nothing has been said about the path of the metal shot during the execution of the entire movement across the ring. For best results, the line of the shot from the back of the ring until it leaves the tips of the fingers should be as straight as possible with increasing pressure directly behind it all through the movement. The line is not parallel with the ground, but there should be a gradual incline as it approaches the front of the ring.

Difficult as the coaching of shot putting may be, the fact still remains that the patient and scientifically minded boy will eventually be the best shot putter, and such a boy should be selected for this event.

Ways to Improve Pole Vaulting

By George E. Haney

Assistant Track Coach, Ohio State University

FROM the standpoint of skill, pole vaulting seems to me to be the most difficult of all the track and field events. It is an event that is great fun for the performer, and, when the event is run off without too much delay, it is popular with the spectators.

However, there are a great many mediocre pole vaulters who could be good pole vaulters simply by paying more attention to a few fundamentals of form and mechanics. The drop in ability from Warmerdam's 15-foot vaulting down to his competitors' heights, it seems to me, is too great. Think how relatively few vaulters in the nation can clear thirteen feet. I believe that the reasons are only partly physical, and that there will be many more 15-foot vaulters when some of today's six-foot high school boys perfect the proper points of form. I would like to suggest a method for beginning pole-vaulters that makes it easy for them to reach the point of having fun, and at the same time emphasizes the points that must be mastered if the boy is ever to be an expert.

Ideal physical qualifications for vaulters have been described many times: height, agility, speed, co-ordination. Courage helps, but it usually comes with practice, anyway. These qualities are probably all essential for the boys who are going to clear fourteen feet. Yet we all know boys of five feet, nine inches or five feet, ten inches who have cleared up to fourteen feet. So I would not discourage anyone who wants to learn to vault. As it stands now, even 11-foot vaulters can score a good many points in some conferences because good vaulters are so rare.

The Handstand or Upset

It is a most difficult thing to teach a boy how to clear a bar that is higher than the grip he has on his pole. By the time most vaulters reach this stage of development, they have acquired the bad habit of swinging too far away from the pole. They are in no position to use any leverage in swinging the feet and body on up *past* the point of the hand-hold. Therefore, I believe that beginners learn better form by starting with the upset, as we call it. The boys seem to understand this term better than any of the others we have tried.

A necessary piece of equipment for all pole vaulters is a rope or section of pole suspended from overhead. The beginner should grasp the rope with both hands slightly overhead. If he is right-handed, his right hand will be on top, otherwise the left. (Henceforth all directions are for right-handed boys.) He should bring his right knee up, push off the left foot, throw his head back, and push his feet up *along* the rope overhead. His arms should remain almost straight. A demonstration of these exercises is excellent. Most normal boys can do this simple pull-up the first time they try, but some have to practice a few days.

The next step is to shove both feet up along the rope, pull with the arms, snap the body over, push *down* on the rope, and release exactly as in actual pole vaulting. The boy should practice this until he can whip his body up and over in an arch and land lightly in good balance. This prevents some injuries and falls that discourage many beginners in pole vaulting. Boys with good co-ordination will do this exercise well the first day, and should always, thereafter, use it for warm-up. A boy can do this exercise many more times without tiring than if he actually vaults with a pole. In order to perform this pull-up properly, the body should "curl" *around* the rope.

The Approach and Take-off

The next step is to show the beginner how to carry his pole. He should face straight forward, not jerk his arms as he runs, and point his pole straight ahead. He should jog down the runway a few times with his pole, without attempting to plant it.

To learn the hand shift, the vaulter should *walk* toward the planting box, and stop about ten feet in front of it. He should slide his bottom hand *up*, swing

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his pole overhead, and stop on his left foot as he puts the pole into the box. When he has mastered the hand movements, he can try jogging slowly and planting the pole. He should not be allowed to leave the ground as yet. If he is going to be a good vaulter, he must approach in an absolutely straight line, with no side-stepping, turning to the side, leaning, or other deviations, and his hands must come exactly overhead (slightly in front of the face), if the vault is ever to be smooth and straight. For this kind of practice an exact approach is not essential. A bit of stride-chopping will bring the left foot down for the take-off.

The vaulter is now ready to try a few practice swings with the pole. First he should go over his rope exercise and be impressed with the fact that he is to do on the pole exactly what he is doing on the rope. Then he should be allowed to hold the pole with his top hand at a spot approximately six feet higher than he can reach, when the pole is standing vertically in the box. He may now make his approach from a *marked* start of about forty feet and try a swing-up. If the stride does not come out right, he should adjust the starting mark and try again. The first swings will be awkward, and the boy will probably temporarily forget some of his instructions. He will look foolish, and right here is the point where many potential pole vaulters quit. If the coach is sympathetic, and keeps reminding him to *swing his feet*, not jump, and to keep trying, before long the boy will find fun in the effort.

Practice Without the Crossbar

He should not use the crossbar. It bothers beginners. In trying to get their feet over the bar, they forget to lean back and push their feet on up past the bar.

As soon as the boy starts to get the feel of a good swing, he may run a bit faster, move his start back a bit farther, and hold a foot higher. Now, the crossbar might be tried at six or seven feet if the swing is coming along. The coach should be sure the standards are well back (toward the pit) on these low heights, and should warn the vaulter to whip his feet up as high as they will go. If a boy can clear the bar at seven feet his first day, it gives him a tremendous lift in morale. I know several boys who have cleared eight feet the first day they took up pole vaulting.

From this point on, until the vaulter moves up to ten feet, the problem is simply one of practicing the above-mentioned points. The run should be lengthened to at least one hundred feet, and the hold on the pole raised to the highest point at which the vaulter can still get a good take-off and swing. The taller the boy the higher he can hold on his pole. It is a mistake to try to hold so high that the vaulter jerks against the pole on the take-off. I feel that most vaulters could go higher if, at least once a week, they would practice edging up the hand-hold and just swinging—*without* the crossbar. It should be remembered that when the hold goes up, the check marks and take-off go back. The speed should be increased, if possible. Another thing that some vaulters fail to take into account is that when the hold is high, the vault takes more time. The movements must be delayed and more deliberate. This extra time will help the cool, unhurried champion who makes use of it. Many boys fail in their highest attempts because they hurry their timing. They swing *away* from the pole instead of staying curled around, and *behind*, it where they have something to pull and push against.

Analyzing Faults

After the vaulter works for a few weeks, he will reach a point where he seems to make no improvement. Then he needs to be studied from all angles to see what improvements can be made in form or training. It is sometimes very baffling to try to decide just what causes form faults, but here is a list of some faults, and the corrections that have worked for me:

1. Coming down on the bar. Caused by not completing the pull-up, releasing too soon, pulling with the arms before the feet are up, or by lack of *pushup* on the release. Can best be seen from the side. Standards should be about one foot beyond the box.

2. Kicking the bar on the way up. Caused by too low a hold, too much speed for low heights, swinging away from the pole too far, or shutting the eyes momentarily. Watch from the side.

3. Falling off balance in the pit. This is dangerous, and comes from an improper release. Practice without the crossbar, until the landing is light and relaxed, the toes and legs absorbing the shock easily.

4. Falling to the right side of the pit. Caused by not bringing the pole straight overhead at the take-off, or by running a right curve at the end of the approach, instead of running straight through. Watch from the front and back, and observe footprints on runway.

5. Falling to the left side of the pit. Caused by leaning too sharply to the left at the take-off, running down the left side of the runway, or by kicking the lead leg too hard to the left at the take-off. The swing should be straight through. Watch from the front.

6. Kicking the pole on the up-swing. Caused by not curling the body around the pole as the feet start up.

7. Lying sideways along the crossbar instead of going over feet first. Caused by crooked take-off and by kicking the lead leg around the pole to the left instead of kicking it straight through.

8. Hitting the bar with hands, arms, or chest. Caused by weak or slow push-off.

9. Exhaustion when making last tries. Caused by lack of running in practice and by vaulting too much at low heights. Let the vaulter pass as long as he can, and try to save energy by making sure of his first attempt at each height.

10. Difficulty with low heights. Caused by having the standards too close to the vaulter. The feet need more room to swing at low heights.

11. Skinning the chest or side. A good sign that the vaulter is using his pole. Have him wear a shirt, at least in practice. If skinning is excessive, the take-off may be crooked. Watch from the front or back.

Practice Plans

During the winter months, prospective vaulters should work out a few times a week doing rope-climbing, acrobatic exercises, and high-bar and parallel-bar work if the equipment is available. As the track season approaches, and before the first meet, there should be a great amount of form work at medium heights. Vaulters should always warm up first by doing jogging, sprints, rope-climbing. *Once* a week vault for height. In early season do not be afraid to jump often, even though you lose spring. You need the vaulting practice and exercise. Twice a week take a long-distance jog; you will need endurance in your championship meet.

After the season of meets arrives do your hard work on Monday, Tuesday, and Wednesday. If you have a meet on Saturday, do not vault on Friday. Do very little on Thursday except to jog and do a little sprinting. The lay-off before the meet allows you to accumulate spring and energy for the competition. If you wish to improve, do not neglect the hard work on Monday and Tuesday.

Additional Precautions and Suggestions

The running approach needs a great deal of attention if the vaulter is to be consistently successful. One cannot attain smooth form unless the take-off spot is the same for every vault. Many systems of check-marks are used successfully, but whatever system is used, constant practice and attention are important. I personally prefer to have a vaulter use only one check-mark if he can get away with it. A vaulter has enough to think about without watching marks as he runs. A good vaulter should make his run long enough, that he can pick up momentum gradually and reach top speed *without straining* before he reaches the take-off point. Many vaulters using a short run have trouble because they are still driving

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The Effect of Marked and Sudden Weight Loss on Physiologic Response

By W. W. Tuttle

Department of Physiology, University of Iowa

ONE of the best indices of the reaction of an athlete to his training and competition is his bodyweight. There are certain weight changes which are to be expected during the season of training, and as a result of competition. Until the athlete becomes adjusted as to condition, diet, sleep and rest, there is apt to be a loss of weight resulting from the training program. In some cases, the stimulation of the appetite by strenuous exercise is so great that the athlete eats more food than is necessary to meet the work requirement. The result is a gain in weight. Sudden losses of body weight are common as a result of strenuous bouts of competition, especially where there is a great deal of sweating. All of these weight changes are normal, and to be expected.

The problem which we wish to discuss here has to do with the weight loss caused by measures such as those sometimes used by wrestlers in making a lower weight division. The practice of reducing the body weight by abstaining from water and food, and by profuse sweating, has raised the question as to the effects produced on the athlete's performance and health. Most people have the impression that the procedures used in such a weight-loss program are detrimental to efficiency and endurance.

In order to aid in clarifying the issues involved in voluntary weight loss, laboratory experiments have been carried out in which normal physiologic responses were compared with those secured under the same conditions soon after the weight loss.[1]

The experiment consisted of the measurement of six athletes with respect to eighteen types of response before and after weight loss. Since the responses measured are subject to considerable normal variations from time to time, five determinations of each response were made at weekly intervals. The responses selected were those which are generally agreed to be important in sports which require speed, accuracy, strength and endurance. As soon as the data were secured over the five-week period, the athletes, all wrestlers, voluntarily lost weight by methods considered orthodox by wrestling coaches. The objective was to have each athlete lose 5 per cent of his body weight, but the final result was a loss which varied from 3.6 to 4.9 per cent (6 to 10 pounds). Soon after the weight was lost, each athlete returned to the laboratory where the eighteen physiologic tests were repeated. The accompanying table shows the responses measured and the results obtained for one subject. Further data are omitted since a sample is sufficient to explain the basis upon which conclusions were drawn. It will be noted that the responses before weight loss are recorded as the range over a five-week period, but after weight loss as a single determination.

With few exceptions, the results obtained after weight loss fall within the range obtained before weight loss. Where this condition exists the conclusion is that the weight loss did not affect the physiologic responses studied. But there were some instances where the scores measured after weight loss fell outside the normal range. Where this occurred, the significance of the difference between the value obtained after weight loss and the highest or lowest number in the range, as the case might be, was considered in drawing conclusions. An example of such a situation is seen in Table 1 in the case of breath holding in inspiration; the time after weight loss is five seconds longer than the longest time recorded before weight loss.

The results of the experiments will be discussed under the following headings:

1. The neuro-muscular system
2. The cardio-vascular system
3. The respiratory system
4. The oxygen requirements

The Neuro-Muscular System. The strength index in every case after weight loss fell within the range of values secured before the weight was lost. The conclusion is that weight loss, to the extent investigated here, did not affect strength. In the case of accuracy of movement, every case after weight loss, except one, fell within the normal range, and the exception was not significantly different than the normal. Thus it can be concluded that weight loss does not alter accuracy of movement. In the steadiness of movement experiment, one case was better and one poorer than normal. The conclusion is that the weight loss is not detrimental to steadiness of movement. The results relative to reaction time are somewhat inconsistent. In two cases, the time was longer, and in one case it was shorter after the weight loss, while four cases fell within the normal range. In general, we are willing to state that reaction time does not suffer materially on account of weight loss.

The Cardio-Vascular System. Weight loss had no significant effect on either systolic or diastolic blood pressure. The resting heart rate is slightly higher after weight loss. This is explained as an emotional reaction to thirst and can be avoided by drinking a small amount of water. In the case of the heart rate after a standard stool-stepping exercise, there was no significant effect due to the weight loss.

Table 1

The range of various physiologic responses over a period of five weeks, as compared to the responses after voluntary weight loss

Test item	Range before	Score after	Test item	Range before	Score after
Strength index	1721 2351	2268	Breath holding in expiration (sec.)	16 23	23
Accuracy of movement	10 12	10	Breath holding in inspiration (sec.)	52 57	62
Steadiness of movement	4 6	5	Vital capacity (cc.)	4120 4250	3620
Reaction time (sec.)	.023 .274	.266	Tidal air (cc.)	434 520	405
Systolic blood pressure	114 138	118	Respiratory rate per min.	11 16	14
Diastolic blood pressure	70 78	78	Resting O_2 (cc./min.)	251 323	270
Resting heart rate	56 66	72	Recovery O_2 (cc.)	1940 2095	2021
Heart rate after exercise	100 110	110	O_2 debt (cc.)	777 968	863
Recovery time (sec.)	90 90	90	O_2 recovery time (min.)	3 5	3

[1] See Research Quarterly, A.P.E.A., 14:158-166 (May 1943) for a detailed report of these experiments.

The data relative to recovery time of the heart after the standard stool-stepping exercise show that with one exception recovery time was not significantly affected. The exceptional case is of interest because the recovery time after exercise was almost three times as long after weight loss as it was before. This reaction is of special interest because in the case of the other experiments which this subject performed, he did not differ significantly from the normal.

Electrocardiograms were made for each subject both before and after weight loss. It is of interest to note that one athlete showed premature beats before weight loss, but none afterwards. We offer no explanation for this. In the other five cases, there were no significant changes in the electrocardiograms.

The Respiratory System. The loss of weight did not affect the length of time that the breath could be held, either in inspiration or expiration. However, the data show that the vital capacity was reduced after weight loss. The tidal air data did not justify any definite conclusions since in two instances it was less, in two cases it was greater, and in the two it was unchanged. There was no significant change in respiratory rate after weight loss.

Oxygen Requirements. The resting oxygen, oxygen debt, and recovery oxygen requirements were determined. In all the experiments having to do with oxygen requirements, the weight loss caused no significant change.

Summary

In order to throw further light on the question of the effects of marked and sudden weight loss on physiologic reactions, a series of laboratory experiments, involving six athletes, was carried out. Considered as a whole, the results justify the conclusion that, except for a reduction in vital capacity, weight loss up to 5 per cent of the body weight does not cause the physiologic responses of the athlete to be affected adversely.

The Air Force Combat Trainer

By George Brent Fielding

Director of Medical Instruction,
354 Army Air Force College Training Detachment,
Eastern Oregon College of Education

THE army air forces have undertaken a tremendous job. They are in the process of training thousands of athletic trainers. Actually the medical instruction received at the various college training detachments is a great deal like the preliminary training an athletic trainer receives.

The duties of these men as pilots, bombardiers and navigators are dangerous undertakings and call for initiative, courage and intelligence. During combat missions, accidents will happen; men will get injured, and, consequently, the men must have a background of medical instruction to be able to meet any emergency that may arise.

In addition to this they are called upon to treat themselves and others for simple emergencies such as blisters, boils, rashes, athletes foot, sprains and disorders of a similar nature.

Teaching the techniques of how to become a proficient first-aider is a somewhat difficult problem, due to the fact that the men lack an adequate background for this type of work.

The men are enrolled in the course in groups of thirty-two men. This group is called a flying group or flight and represents a unit comparable to an ordinary college class. The flight attends classes for sixty minutes a day every day except Sunday. The course lasts from two and one-half to three months. It is divided up into three specific phases in the following manner; (1) the anatomy and physiology of the human body, (2) a study of specific injuries, and (3) laboratory work.

Since the average student has very little background in anatomy, it is necessary to spend a great deal of time on the basic anatomy of the human body. This is taught by means of lectures, films, charts and diagrams. Only the most important phases of the anatomy of the body are covered.

Specific injuries, covered by means similar to that of the anatomy of the body are; (1) wounds, all types; (2) burns; (3) muscular injuries, strains, sprains, dislocations and bruises; (4) shock; (5) bone injuries, fractures, and bone bruises; (6) poisons, including war gases; (7) artificial respiration; (8) minor injuries and infections, athletes foot, gym itch, boils, and blisters.

A complete study is made of these injuries, the causes, the symptoms, the specific structures involved in the injury and the treatment. Two types of treatments are given: One that could be given under ordinary circumstances, and the type of treatment that could be given under combat conditions.

The laboratory aspect is of great importance and is carried on as intensively as time and facilities permit. Each college training detachment has a complete infirmary with a competent staff which is a definite aid to the laboratory phase of the course.

The student may observe the specific injuries that are frequently treated in the infirmary. Advice and suggestions are made by the flight surgeon and registered nurses. The equipment of the infirmary is available to the student; such as heat lamps, medicinal aids, sterilizers and minor surgical instruments.

A good portion of the course is devoted to practical application of dressings and bandages. Emphasis is placed on the ability of the student to apply correctly, not only the triangular bandage, but also the roller bandages, to various types of injuries.

Practical applications of splinting are practiced. Means of devising splints are discussed and practiced, particularly traction splinting.

Working closely with the athletic department of the college training detachment, the student is able to observe and treat injuries that occur in the program such as sprains, muscle bruises, athletes foot, gym itch and other minor disorders. A considerable amount of time is devoted to the demonstration and practice of taping techniques. The student is given the opportunity to practice the application of tapings to wrists, ankles, shoulders, knees and other injuries, requiring the use of tape in their treatment. Along with taping techniques, some time is devoted to the construction of braces, pads, protective wraps and slings for certain injuries.

Other considerations included in the laboratory phase of the program are the use of counter irritants and the elastic bandage, and the use of canvas wraps as protective coverings.

The student is familiarized with the contents of a well-constructed first aid kit. The advantages and disadvantages are made of each kit and made clear to him, so that he may choose which kit will best fill his needs under combat conditions.

Periodic examinations are given, both orally and written, as well as practical problem demonstrations to test the ability of the student under as nearly as possible combat conditions.

Many instances reported from the combat zones have proven the value of this course. I feel that the army air forces are making an immeasurable contribution to the American athletic trainers of the high schools and colleges in bringing the importance of this work, and the highly specialized skills involved therein, to the attention of the public.

Ways to Improve Pole Vaulting

(Continued from page 36)

for speed when they take off and cannot attain the smoothness that comes only with relaxation. Cornelius Warmerdam likes a run of 150 feet. I believe that this run allows him to use his speed to more advantage than if he ran a shorter distance. Slower men need not run so far, simply because they reach their peak speed sooner.

Vaulters need to be reminded that their starting marks must be adjusted to varying conditions which change their length of stride. For example, with the wind at the back, the run must be lengthened. With the wind in the face, shorten the run. On a hard track lengthen, on a soft track shorten, the run. On a warm day the stride may lengthen more than on a cold day. Some vaulters tend to lengthen the stride when trying harder for a high vault. Others get excited and chop the stride. The stride is longer when the warm-up clothes are removed. The most important part of the warm-up for any day is to adjust the check-marks according to the situation.

Mental attitude is important. When the vaulter is trying for height above that which he has formerly cleared, he is likely to be nervous. He must be reminded that the same smooth form that took him to former heights will help him now; he need only try to get his feet a bit higher when he "upsets."

Another mistake many vaulters make is to change the hand-hold too often. Every time the grip on the pole is moved the timing of the vault is changed. Yet many vaulters trot up to the standards and measure the hold before every vault. This is a boring waste of time. In practice, the vaulter can find a low hold that he can handle easily for warm-up work and mark this spot with a ring of white tape. Another and higher hold should be used for all trials in competition at all heights. The only exception is when the vaulter has an unusual amount of speed and spring. He feels confident and wants to try for a higher vault than he has yet made. Only then should he gamble on raising his grip two or three inches. Otherwise all experimenting should take place in practice sessions on Monday or Tuesday so that any strained shoulder muscle will have time to heal.

The proper place for the vaulting standards is a matter of controversy. Suppose we imagine an ideal vault, in which the vaulter's pole comes to an absolutely erect position for the push-off. Then there must be room for the vaulter's arms between the crossbar and the pole. About one foot of leeway seems to be right for distance from the vertical pole to the crossbar from eleven feet, six inches on up. At lower heights a bit more room is needed, especially by long-legged vaulters, because the feet are still swinging in the pendulum arc as they pass the crossbar. Most boys who want the standards closer are pulling too soon and their pole never quite reaches the vertical position necessary for a good push-off. This may be checked by watching from the side and observing the position of the pole when the vaulter reaches his peak. A good corrective practice exercise is to set the standards at least two feet away from the planting box and swing, holding to the pole and delaying the upset until the pole comes to vertical position. If all boys would practice with the standards at about the same place, they would learn to time the vault accordingly, and would save a great deal of the boring hocus-pocus that goes on at meets, delaying competition while the competitors lose their edge and the spectators get restless.

I believe that if coaches would have more patience in helping beginning pole vaulters and in analyzing older ones, the competition would greatly improve in this most difficult of all events. Too often the boy who is tall and fast is shoved into hurdling and jumping and not taught vaulting. We miss a golden opportunity in not teaching some of these boys to be vaulters first and hurdlers or jumpers second. It may be coaches have found, as I have, that many boys, after learning to vault, cannot be dragged away to any other event.

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Coaches and softball players,—last year we made an excellent start in staging an all-out nation-wide intramural softball tournament. Now we are out to double our participation. This year we want 200,000 boys and girls enrolled in our intramural softball tournaments.

Sanctioned by The Amateur Softball Association of America—an allied member of the A.A.U. Awards by The Coca-Cola Company.

(ENTRY BLANK)

Amateur Softball Association
8458 South Yates Avenue
Chicago, Illinois

Please enter our high school in the Amateur Softball Association Coca-Cola 1944 Spring Intramural Softball Tournament. It is understood that at the completion of this tournament by our school a set of 10 Sterling A. S. A. Coca-Cola Softball Awards will be sent us without charge.
We will have

.....boys teams

.....girls teams

School name .....

City ..... **State** .....

Coach's name .....

No entry fees. No obligation. Just fill out the coupon and mail it in. You will be mailed brackets and all instructions giving full details for conducting your own tournament. Do it today . . . and get valuable awards laid aside for your school by The Coca-Cola Company.

Keep Them Out!

These Athletic Equipment Enemies Take Quite a Toll Each Year

WITH new athletic equipment so scarce, it seems like an opportune time to mention the fact that each year the IVORY SYSTEM sees a lot of nice equipment which has been damaged by the illustrated pests.

Moths do quite a job on woolens, and mildew takes a yearly toll on all kinds of athletic equipment. It is also a rather common occurrence for us to receive equipment which has been chewed up by mice and rats.

Naphthalene Moth Flakes (The I. S. has plenty of them) will keep moths and rodents away. Mildew thrives only where dampness and moisture are present, so keep equipment in a cool, dry place.

Ivory System

RECONDITIONERS OF ATHLETIC EQUIPMENT

PEABODY, MASSACHUSETTS